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A WORLD BANK COUNTRY STUDY

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Czech Republic

Capital Market Review

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Washington, D.C.

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ABSTRACT

This review of the Czech capital market is based on the findings of a mission that visited the Czech Republic in April 1998. The report was requested by the Czech Government in January 1998, as part of an ongoing effort to improve the regulatory and institutional framework for capital market operations. The Government had already implemented a series of reforms affecting the operations of the securities market, investment funds, and banks, and was in the process of elaborating amendments to the Laws on pension funds and insurance companies. The Government requested the Bank to assess whether the reforms being implemented would remove all the major deficiencies in the capital market, and to identify the remaining gaps. The Government requested further that the analysis take into consideration the need to harmonize legislation with the EU and ensure a smooth integration into the common market. The new Government elected in May 1998 confirmed its interest in a comprehensive analysis of the capital market.

Following the Government's request, the Bank approached the European Commission and obtained strong support of the Commission to the elaboration the report. The team that visited the Czech Republic comprised staff of the World Bank and the European Commission, as well as consultants selected and financed from the EU-Phare program. The team was led by Roberto Rocha (principal economist of the World Bank's Regional Office in Budapest) and Demir Yener (financial specialist, World Bank); and included Dimitri Vittas (pension and insurance specialist, World Bank), Douglas A. Webb (legal advisor, World Bank), David Ellerman (economic advisor, World Bank); Johan Lovengreen (insurance specialist, EC-DG15); Jonathan Miller (securities market specialist, consultant); Dennis Forthomme (mutual fund specialist, consultant); and Bernard Gilson de Rouvreux (securities market specialist, consultant).

The final document provides an analysis of the securities market and the main groups of institutions operating in the capital market, namely, investment funds, pension funds and insurance companies. The report also makes an assessment of corporate governance in the Czech Republic, based on the performance of publicly traded companies and an analysis of the relevant pieces of legislation. The report does not provide an in-depth analysis of the banking sector, but examines the areas of the regulatory framework for banks which are relevant to the analysis of corporate governance.

The mission benefited from previous work on the Czech capital market undertaken inside the World Bank by Meir Kohn, Ilham Zurayk, and Gerhard Pohl. During the elaboration of the report, the mission also benefited from valuable technical inputs from Jana Matesova (Alternate Executive Director, World Bank); Jan Hanousek (CERGE-Prague); Libor Nemecek (CERGE-Prague), and Randall Filer (CERGE-Prague and NYU). The mission presented the report to the Czech authorities in November 1998, in a seminar organized by the Ministry of Finance in Prague. The mission benefited from comments from several seminar participants, including Ivo Svoboda (Finance Minister), Jiri Spicka (MoF); Vaclav Krivohlavek (MoF), Pavel Mertlik (Deputy Prime Minister), Jan Mladek (chief advisor to the Deputy Prime Minister), Tomas Jezek (Securities Exchange Commission), Jana Pospilova (Securities Exchange Commission), Jan Muller (Securities Exchange Commission), Michal Mejstrik (Charles University), Jiri Havel (Charles University), and Jiri Brabec (ZB Trust Investment Company). Judit Spat (World Bank-Budapest) provided valuable research assistance. The report was processed by Andrea Toth (World Bank-Budapest).

The report was cleared by Roger Grawe (country director, World Bank), Lajos Bokros (director for finance and private sector development, World Bank), and Joseph Stiglitz (vice-president and chief economist, World Bank).

CURRENCY AND EQUIVALENT UNITS

Currency Unit = Czech Crown
US$ 1 = CZK 32.478
CZK 1 = USD 0.03079

ACRONYMS AND ABBREVIATIONS

CAP	Common Agricultural Policy
CEE	Central and Eastern Europe
CP	Ceska Pojistovna (Czech Insurance Company)
CPI	Consumer Price Index
CZK	Czech Crown
EEC	European Economic Community
EU	European Union
FIBV	Federation Internationale des Bourses des Valeurs
GDP	Gross Domestic Product
ICOR	Incremental Capital-Output Ratio
IFC	International Finance Corporation
IFCG	International Finance Corporation Global Composite
IMF	International Monetary Fund
IPF	Investment Privatization Fund
ISD	Investment Service Directives
MOF	Ministry of Finance
MTPL	Motor Third Party Liability
NAV	Net Asset Value
OMF	Open-End Mutual Fund
PBV	Price Book Value
PE	Price Earnings
POR	Payout Ratio
PPI	Producer Price Index
PPP	Purchasing Power Parity
PRIBOR	Prime Interbank Borrowing Rate
PSE	Prague Stock Exchange
RMS	RM-System
ROE	Return on Equity
RR	Retention Ratio
SCP	Securities Center
SPF	Supplementary Pension Funds
UCTIS	Undertakings for Collective Investment in Transferable Securities
UNIS	Association of Mutual Funds
VAT	Value Added Tax

Fiscal Year
January 1-December 31

EXECUTIVE SUMMARY

Macroeconomic Performance After Independence

The Czech Republic achieved impressive economic results following its independence in 1993, as indicated by rising growth rates (reaching 6.5 percent p.a. in 1995), moderate current account deficits (around 2 percent of GDP), and a decline in the rate of inflation to one digit levels. However, macroeconomic performance started faltering in 1996, as indicated by the emergence of large current account deficits (7.5 percent of GDP) and a sharp slowdown in economic growth. The current account imbalances have been reduced by a series of stabilization measures, but the economy has remained stagnant, reducing the average growth rate in the whole post-independence period to a disappointing 2.3 percent p.a. The growth rate looks particularly disappointing considering the relatively high investment ratios maintained throughout this period (around 30 percent of GDP).

The disappointing growth performance of the Czech economy, despite comparatively high investment ratios, has raised questions as to how much progress has effectively been achieved at structural reforms. Until the mid-1990s, it seemed that the Czech economy had undergone extensive structural reforms. Major reforms were implemented early in the 1990s, including a sharp reduction in subsidies, an overhaul of the tax system, and the liberalization of prices and foreign trade. The Czech Republic also implemented an innovative voucher privatization program that enabled the fast privatization of a large number of enterprises. Finally, these structural reforms were supported by reasonably tight fiscal policies (as indicated by small budget deficits or even surpluses), contributing to a stable macroeconomic environment, the reduction in inflation, and the growth of the private sector.

Although these reforms did contribute to the early positive results achieved by the Czech economy, it became increasingly apparent that the regulatory framework for enterprises and financial institutions contained several flaws that limited the potential gains from privatization, and reduced the overall efficiency of the economy. The internal mechanisms of corporate governance were not sufficiently strengthened, opening room for abuse by large shareholders and managers. The external mechanisms of corporate governance were also visibly weak--the major commercial banks remained under State ownership and subject to political pressures, and the bankruptcy framework remained dysfunctional and ineffective.

These structural deficiencies have resulted in a mixed restructuring record, as suggested by the rather weak financial performance of Czech firms in recent years. Average nominal returns on equity have remained generally low--between 3 and 6 percent for large firms and between 1 and 3 percent for medium and small firms. Moreover, while there was a reduction in enterprise losses and an increase in profits in the 1993-95 period, financial results worsened again in 1996, and improved only modestly during 1997. The unemployment numbers also suggest that restructuring did not proceed as fast as expected at the start of the transition--the rate of unemployment remained at 3 percent until recently, a number that looks unrealistic by any international comparison, particularly by comparison with other transitional countries undergoing restructuring. These indicators suggest that there is still substantial scope for further gains in efficiency.

Structural Deficiencies in the Czech Capital Market

Examining in more detail the regulatory framework for enterprises and the main financial institutions operating in the Czech capital market is essential to understanding the recent problems experienced by the Czech economy. Analyzing the efficiency of capital markets is a useful exercise for any country, as a well functioning capital market can contribute significantly to better resource mobilization and allocation, and ultimately to a better growth performance. The various channels through which resource mobilization and allocation are positively affected are well-known--a well functioning capital market offers better risk diversification opportunities, improves the dissemination of information, enhances price discovery and the valuation of firms and intermediaries, promotes better corporate governance, and reduces the average cost of capital by creating additional sources of finance.

Analyzing the efficiency of capital markets is particularly important in the Czech case, because the Czech capital market was expected to play a very critical role in the privatization strategy adopted by the Government in the early 1990s. Such a strategy was centered in a voucher privatization program, which involved the distribution of privatization vouchers to individuals at very low prices, and the subsequent use of these vouchers for the purchase of enterprise shares in public auctions. The program involved the distribution of vouchers to 6 million Czech citizens (60 percent of the population) in two waves, and the subsequent privatization of more than 1,700 large and medium enterprises. It was considered an innovative program for having achieved the fast privatization of a large number of firms, and for having transformed a large number of Czech citizens into shareholders (holding directly or indirectly the shares of more than 1,700 publicly tradable joint-stock companies).

It was clear that the success of the privatization program would depend on many other elements, in addition to an efficient distribution of vouchers and the organization of public auctions. In particular, the designers of the voucher program were aware that a pure distribution of vouchers would lead to a very fragmented ownership and weak corporate governance. In order to combine voucher privatization with a rapid improvement in corporate governance, a number of additional elements were introduced into the program. First, several investment funds were licensed and expected to perform a number of important tasks. These tasks included the collection of vouchers, the bidding for enterprise shares in the auctions, and the active governance of enterprises in their portfolios. Second, the regulatory framework in the capital market was deliberately liberal, so as to facilitate secondary trading and the consolidation of ownership, by investment funds and strategic investors. Third, a multiplicity of trading channels was allowed for the same reason.

The first results of the voucher program seemed to be positive. Investment funds attracted most vouchers (70 and 65 percent of vouchers issued in the first and second waves, respectively), secondary trading in shares was intensive, and enterprise ownership was progressively consolidated in fewer hands. For the sake of illustration, the share of joint stock companies having a large owner holding more than 30 percent of equity increased from 7 percent in 1993 to 70 percent in 1997. The emerging large shareholders were primarily investment funds (or groups of funds) and strategic investors.

The greater concentration of ownership was *per se* a positive development, as the presence of large shareholders is one of the central components of a sound governance system. However, ownership concentration was achieved at a heavy cost, as indicated by the loss of confidence on investment funds and on capital market institutions more generally. In addition, the greater concentration of ownership was not complemented by other elements essential for a sound governance system, resulting ultimately in weak corporate governance and less restructuring than expected at the start of the program. These two negative developments merit further elaboration.

The loss of confidence of the population on capital market institutions happened because secondary trading was conducted in a non-transparent way, involving in many cases fraudulent transactions by fund and enterprise managers. The stripping of assets at the expense of shareholders was facilitated by the closed-end structure of most investment funds, weaknesses in the regulatory framework, the fragmentation of securities markets (facilitating price manipulation and the emergence of different prices for the same security), and the lax supervision of capital market operations. The perception of widespread fraud was reflected in the high discounts on the prices of fund shares--between 30 and 60 percent for most funds, and above 90 percent in the case of funds converted into holding companies (a device used by several investment funds to escape regulatory control altogether).

Corporate governance did not improve as expected, despite greater ownership concentration, because of the absence of other important elements of a sound governance framework. For one, investment funds did not perform well their governance role, due to the lack of incentives to maximize the value of their portfolios (not to mention the lack of resources and skills). The closed-end structure of most investment funds proved to be one of the major disincentives for good performance, as it allowed inefficient and corrupt fund managers to stay in the market, without being threatened by a net withdrawal of funds. The poor performance of investment funds is reflected not only in the high discounts, mentioned above, but also on the evidence from empirical analysis that enterprises primarily controlled by investment funds restructured less than enterprises controlled by strategic investors.

The weak protection of minority shareholder rights and the absence of other important elements of internal governance proved to be another important obstacle to sound management and active restructuring. Although there is evidence that enterprises controlled by strategic investors performed better than enterprises controlled by investment funds, even in the first group of enterprises there have been many cases where the controlling shareholder has exercised control for personal gain, at the expense of the financial health of the enterprise and the interests of minority shareholders. The specific regulatory deficiencies which opened room for abuse by large controlling shareholders included limits on the voting rights of small shareholders, poor disclosure of financial information (both the extent and the quality of information), and weak accountability of company directors to shareholders.

Weaknesses in the external mechanisms of governance also opened room for abuse by large shareholders and managers. For one, some serious impediments to take-overs persisted, such as legal obstacles for prospective buyers to identify small shareholders and buy their shares. More importantly, enterprises were not subject to strong pressure from creditors, despite the accumulation of a large stock of bad loans in the portfolios of commercial banks (amounting to 20 percent of GDP in 1997). There are three major reasons why banks did not become more assertive towards their problem borrowers. First, the major commercial banks remained State-owned and subject to political pressures. Second, these banks have suffered from a weak capital base and the tax rules have prevented a faster build up of provisions and capital. Finally, the foreclosure and bankruptcy framework has remained dysfunctional, as indicated by the relatively low number of completed bankruptcies.

It became increasingly apparent to policy-makers that the loss of credibility of capital market institutions could become a major obstacle to the mobilization of savings. It also became apparent that the deficiencies in regulation and supervision of enterprises, banks, investment funds, and other capital market institutions (pension funds and insurance companies) would prevent the build up of strong governance structures and faster enterprise restructuring, as well as the allocation of fresh capital to the most dynamic enterprises and sectors. The implication of these deficiencies on the growth performance of the Czech economy became equally apparent.

Recent Efforts to Strengthen the Regulatory Framework

The Government reacted to the emergence of problems in the capital market by strengthening the regulatory framework in several steps. In 1996, several amendments to the Commercial Code and the Investment Fund Act were introduced. These amendments improved, among other things, disclosure and minority shareholder protection rules, and imposed stringent rules for the conversion of investment funds into holding companies. However, it became apparent in 1997 that these improvements had not been able to improve governance of investment funds significantly and to arrest fraud. For this reason, new amendments were drafted in 1997 and enacted in 1998. They included amendments to the Act on Banks, the introduction of an autonomous Securities Exchange Commission, and amendments to the Investment Fund Act.

The amendments to the Act on Banks attempt to minimize conflicts of interest which may arise when banks are creditors and owners at the same time, by introducing more restrictive board rules and investment rules. These amendments have been accompanied by two other important developments in the banking sector. First, the Czech National Bank has been adopting more stringent loan classification and provisioning rules, and pressing the banks to become more assertive towards their debtors. Second, the Government privatized a major State bank in early 1998, and announced the privatization of the remaining banks. These measures should result in greater pressure from creditors and contribute to further enterprise restructuring.

The creation of a Securities Commission outside the Ministry of Finance is another very important step towards a sound capital market. Although the new Commission does not yet enjoy full regulatory independence (the regulations have to be issued as Government Decrees), it has substantial enforcement power, and has proved the willingness to use it in the first months of operation. Greater enforcement of the regulatory framework will certainly improve the functioning of the Czech capital market, as many fraudulent operations have been breaches of existing laws.

Finally, the new Investment Fund Act has introduced important changes in the capital market by, among other measures, mandating the opening of all investment funds within a period of three years. This is a radical but basically sound decision, justified by the poor performance of these funds, and the need to rebuild confidence in capital market institutions. The opening will allow better exit opportunities for a large number of dissatisfied individual investors, eliminate the weakest institutions from the market, and generally improve investment fund management, because under-performers will face for the first time the threat of net redemptions.

In addition to these changes, the Government is also preparing improvements in the regulatory framework for pension funds and insurance companies that may affect significantly the way these institutions operate, and could have a positive impact on the overall efficiency of the capital market. Indeed, although the scandals reported by the press have focused public attention on investment funds, it should be noted that the assets of insurance companies are already as large as the assets of investment funds (around 10 percent of GDP). Furthermore, although pension funds are still small by comparison (their assets amount to less than 1.5 percent of GDP), they should be one of the fastest growing sectors in the capital market in future years, due to the need to curtail future pension benefits from the public pension system and eliminate actuarial imbalances.

An Overview of the Current Status of Capital Market Reforms

The central question faced by Czech policy-makers is whether the changes that have been already enacted, combined with those that are under elaboration, will enable the capital market to perform all its functions efficiently and contribute to the development of the Czech economy. The report makes a detailed assessment of the regulatory and institutional framework in the major sectors of the Czech capital market, identifies the deficiencies that still remain, and provides recommendations for further improvements. The identification of the remaining gaps and the recommendations for further improvements take into consideration the need to harmonize legislation with the European Union, and ensure a smooth integration into the common market.

The report indicates that, although the quality of the regulatory and institutional framework has generally improved, it is still uneven across different sectors of the capital market. The regulation of *securities markets* is generally adequate and in line with EU directives. Although some additional improvements may and should be introduced in the Securities Act and the Stock Exchange Act, the major problem in security trading is the lack of enforcement of trading rules, as most of the fraudulent operations with securities have been breaches of existing laws. In addition to improvements in regulation and enforcement, there is also a need to integrate further the different trading channels and ensure integrity in price discovery.

The regulatory framework for *investment funds* has been greatly improved by the introduction of the new Investment Fund Act. However, some additional improvements are necessary, to ensure a sound growth of mutual funds in the future, and full harmonization with two key EU directives, the directive on undertakings for collective investment in transferable securities (UCITS) and the investment services directive (ISD). The required improvements are mostly in the areas of pricing, taxation, custodian services, disclosure, and marketing regulation.

The current regulatory framework for *pension funds* and *insurance companies* contain several serious deficiencies. The Government has been elaborating major amendments to the two Laws which would greatly strengthen transparency and discipline in these two sectors. The amendments to the Insurance Act would result in a good legal framework and bring it much closer to the EU directives in the insurance area. The amendments to the Supplementary Pension Insurance Act (which regulates private pension funds) would also introduce major improvements in the sector, but they do not address all the deficiencies observed in the sector today. Correcting these deficiencies would require expanding the amendments and introducing additional rules through Government Decrees.

Although the Government has also made efforts to improve the quality of *corporate governance* in the Czech economy, further improvements are necessary. The measures which are needed cover a range of different areas, such as shareholder voting rules, disclosure rules, duties of company directors, foreclosure and bankruptcy rules and procedures, and the ownership structure of commercial banks. Introducing these improvements will require a series of amendments to the Commercial Code, the Bankruptcy Law, and the regulatory framework for banks. Last but not least, while the strengthening of the new Securities Commission will certainly contribute to improving enforcement, other institutions charged with enforcement (the police and the judiciary) remain unequipped to discharge their functions.

Identifying Remaining Gaps in the Regulatory and Institutional Framework

The Securities Market

Despite the initial impression that may be given by the traditional indicators of size and liquidity, the Czech capital market is found to have a moderate size, to have been a negligible source of finance, and to be largely illiquid, except for a small number of traded shares. The traditional price indicators (the stock exchange index and the average price-earnings ratios) are also misleading, because they do not capture the differences in security prices across different marketplaces. While the increase in market size and liquidity can be seen as long-term goals, correcting the lack of price integrity is a more urgent problem, as it undermines confidence in securities as a medium of investment, distorts credit assessment and the valuation of financial intermediaries, and perverts the allocation of risk capital.

The achievement of price integrity will require further progress on two parallel tracks. The new Securities Commission must continue improving the regulatory framework and ensure much better enforcement, as most of the fraudulent operations with securities have been breaches of existing laws. These improvements in regulation and enforcement should be accompanied by parallel improvements in the organization of the market. Market regulators have to face the failure of the Prague Stock Exchange (PSE) and the RM-System (RMS) to provide transparent trading systems (a consolidated price display, co-ordinated settlement and freedom in order-routing) and assure unified pricing. The schism in settlement facilities also inhibits arbitrage between markets and increases overhead costs.

Investment Funds

As mentioned above, the mandatory opening of funds introduced by the new Investment Fund Act is a radical but basically sound decision. However, more detailed guidelines to orient institutions during the opening process are still lacking. Also, the present regulatory framework is basically adequate to guide the operations of open funds, but some weaknesses still remain. Some of the rules on pricing and redemption are still deficient (e.g. historic pricing is still used, opening room for speculation against the funds, some thinly traded securities may not be well priced, redemption of shares may linger without compensation to investors); taxation of income and capital gains at the fund level imply double taxation, placing Czech funds in a disadvantageous position; the custodian is not required to check and approve transactions *ex-ante,* reducing the protection to investors; and marketing regulation is still weak, opening room for abuse and fraud.

Finally, there is a role for genuine venture capital funds exerting active governance, but the regulatory framework may not allow these funds to emerge. The law allows new closed-end funds to be formed, but subjects them to the same regulation of open funds. Unless the regulatory framework is adapted, the new closed-end funds will not play the role of venture capital funds, and may draw little interest from investors.

Corporate Governance

Although the internal mechanisms of governance have been considerably improved since 1996, minority shareholder rights are still inadequate, corporate controllers are not fully accountable to shareholders, and the quality of financial disclosure is very uneven across enterprises. Holding companies constitute a challenge, as they are still a collective investment vehicle, but have escaped the more stringent regulatory framework that applies to these institutions.

There is also wide scope to strengthen the external mechanisms of governance. Although one State bank was privatized in early 1998, the three largest commercial banks remain State-owned and still hold a very large amount of bad loans in their portfolios. The Czech National Bank has been pressing the banks to increase the level of provisions and become more assertive towards their debtors, but tax rules have prevented a faster provision build-up. The rules on collateral and foreclosure and the bankruptcy framework remain cumbersome. The Consolidation Bank has received a large amount of classified loans from the other banks but has contributed little to the restructuring of its bad debtors.

Finally, enforcement capacity is still weak. Although the introduction of a Securities Commission is a very important step towards stronger enforcement capacity, the Commission still has limited financial and regulatory independence, and still needs to implement a well-articulated training and institutional development program. Moreover, enforcement of the legal framework does not depend on the Commission alone, also involving the police and the court system, which does not count with a critical mass of judges and officials well trained and able to deal with a large number of commercial disputes and bankruptcy cases.

Pension Funds

The private pension sector suffer from a number of weaknesses. First, the institutions may fail to promote supplementary pensions, as they effectively offer short term savings policies. Second, because the funds have a relatively short time horizon, they may not become providers of long-term resources and will contribute less effectively to capital formation and resource allocation. Third, participants are not required to save a minimum percentage of their earnings, leading to a low average contribution and constraining the growth of the system. Fourth, there are no clear rules on accounting standards and information disclosure, and no guidelines on advertising. As a result, the system is opaque, and the public cannot make informed decisions. Finally, the supervisory function is under-equipped, and appears to focus on ensuring that no participant receives multiple state contributions, and to overlook the importance of prudent policies. The Ministry of Finance has finalized an extensive evaluation of the sector and has drafted various amendments to the Pension Fund Law. These amendments address several, but not all, of the problems identified above.

Insurance Companies

The main problems in the sector are the presence of financially weak companies, the feeble enforcement of the prudential provisions of existing legislation, the continuing monopoly of some basic classes of business, and the continuing approval requirement of general policy conditions. The requirement for prior supervisory approval discourages innovation and the introduction into the Czech market of insurance contracts that meet specialized needs and have been successfully launched in other more advanced countries. The authorities are well aware of these problems, and have drafted amendments to insurance legislation that would remedy most of the problems experienced by the sector.

Policy Recommendations

Securities Market

The broad objectives of the Commission for the securities market should be to restrict the number of publicly tradable companies (to those that really fit this profile and that may benefit from open access to the capital market), integrate the different trading channels, and ensure compliance with the regulatory framework, while also proposing and implementing further improvements in legislation.

These actions would ensure the achievement of price convergence, increase market liquidity, restore confidence, and open more possibilities for new equity issues.

The reduction in the number of publicly tradable companies would be naturally achieved if the controlling shareholder is induced to buy the shares of stranded minority shareholders and transform the company into a privately-held company. This could be achieved by strengthening the enforcement of the existing rules, particularly trading and disclosure rules, and by introducing further improvements in the internal mechanisms of governance, particularly in the area of minority shareholder protection (as discussed below). These two sets of actions would make it costly to remain public and encourage several firms to change their legal status. The reduction in the number of tradable shares would "clean the market", allowing the Commission to supervise fewer companies more effectively, and contribute to more transparency in trading.

The measures required to improve the enforcement of trading rules would include: (i) reviewing the jurisdiction of the Securities Commission, particularly in relation to its powers over the Stock Exchange; (ii) incorporating conduct of business rules for the protection of investors as required by the EU's Investment Services Directive; (iii) introducing a better compliance regime by attaching an audit trail so that trading operations can be exposed to regulatory inspection; (iv) developing procedures for criminal prosecution for those who dishonestly misappropriate corporate or fund assets; (v) applying administrative sanctions available to the Commission, for reprimand, fine, or suspension of licence; (vi) exploring the self-regulatory powers of the Stock Exchange, to allow for summary treatment of complaints against member firms and provision for restitution of profits arising from misconduct.

The measures that would deal with market fragmentation and contribute to a better market structure would include: (i) establishing the universal clearing centre; (ii) requiring facilities for order routing which ensure that investors obtain best execution, and prohibit "cross-listing" on more than one organized market when this is not possible; (iii) enforcing timely and comprehensive price disclosure; (iv) enforcing comprehensive disclosure by issuers, in accord with a strict interpretation of the Securities Law; (v) providing guidance to publicly traded companies on notifiable events and appropriate information release to events of varying importance; (vi) establishing quality of market monitoring for breadth, depth and liquidity of the market and quality of price discovery.

Investment Funds

Managing the opening of investment funds. The Securities Commission should ensure an orderly opening process and a fair treatment of investors during the opening. That would include: (i) issuing guidelines clarifying the different stages of the opening process; (ii) allowing the temporary suspension of redemptions in situations of illiquidity and issuing guidelines for the execution of outstanding requests at the same price; (iii) retaining exit opportunities during the temporary suspension by allowing secondary trading; (iv) providing temporary regulatory forbearance during the opening, (v) providing standardized texts for articles of association and prospectuses to facilitate the transition from closed to open funds.

Improve Pricing Rules. The measures that would improve pricing and other related rules would include: (i) replacing historical pricing by forward pricing; (ii) granting some leeway for managers to price securities issued by enterprises in bankruptcy or not traded, subject to approval by the depository and the auditors; (iii) ensuring that there is single pricing of open funds' shares, when the shares are also traded in secondary markets, by de-listing or mandating that the shares be negotiated at NAV

minus/plus a margin; (iv) shortening the maximum period of redemption, or accruing interest on NAV to compensate for the delay.

Adjust the Regulatory Framework for Integration into the EU by: (i) obliging fund managers to publish detailed portfolio composition for all holdings; (ii) reducing the maximum holdings of individual equities, from 10 to 5 percent of a fund's net assets (with the appropriate exceptions); (iii) strengthening the role of the depository; (iv) removing the tax disadvantage affecting Czech funds by exempting them from VAT, and by removing the taxation on income and capital gains (which implies double taxation); (v) preparing regulations preventing abusive or fraudulent sales practices, and encouraging self-regulatory bodies to establish and enforce codes of conduct on their members.

Handle Holding Companies by: (i) improving the internal mechanisms of corporate governance for all joint stock companies along the lines suggested below; (ii) imposing additional disclosure rules in the case of holding companies. Any company with more than a minimum number of shareholders (e.g., 100 shareholders), and with a substantial proportion of its assets invested in publicly tradable securities should provide a comparable level of disclosure to that required for investment funds.

Open Space for Genuine Venture Capital Funds. Introduce a different regulatory framework for closed-end funds formed in the future, allowing them to hold much larger portions of equity and to exert active governance, subject to well-written prospectuses and articles of association.

Corporate Governance

Recommendations for Improvements in Internal Governance

Privatize enterprises still controlled by the State, mainly banks and utilities. Comprehensive regulatory reforms should be undertaken, opening the ground for the privatization of utilities.

Strengthen further minority shareholder protection by: (i) reducing the threshold for shareholders to call a general meeting, from 10 percent of the share capital to 5 percent, and to a still lower percentage for the largest companies; (ii) entitling any shareholder to obtain a full copy of the list of all shareholders of the company, upon request and payment of the costs. If this measure violates shareholder privacy, the authorities should explore legal ways for the board of directors or the securities registrar to obtain shareholders' permission to reveal their identity and address; (iii) requiring any general meeting to include the participation of not only large shareholders, but also a minimum proportion of the total number of shareholders; (iv) allowing cumulative voting to strengthen the influence of small shareholders in the board; (v) reducing the threshold at which large shareholders must offer to buy-out of minority shareholders, from 50 percent to 25-30 percent; (vi) requiring prior shareholder approval of "vulnerable" transactions such as those relating to the purchase or disposal of substantial assets; (vii) encouraging proxy arrangements.

Clarify the duties of directors to the company. The "bright-line" rules designed to ensure that directors are aware of their obligations would include: (i) a duty to act with diligence and on the best interests of the company; (ii) a duty to disclose to other directors any personal interest in a transaction to be entered into by the company and not to vote on that transaction; and (iii) a duty to ensure that the business of the company is not carried on in such a way as to create a substantial risk of loss to creditors. These duties should be enforceable by the company, or by any shareholder.

Improve disclosure and the quality of information. (i) Although disclosure requirements are extensive, they are scattered in several laws and seem to be routinely ignored by several companies. The Government should introduce the obligation for companies to disclose financial statements and annual reports in the internet, and enforce the requirements; (ii) the Government should consider transferring the responsibility for setting accounting and auditing standards to independent and self-regulating bodies, although the Commission should retain the authority to impose supplemental reporting requirements; (iii) the removal of an external auditor should not be permitted except with the prior approval of the shareholders voting at a general meeting; (iv) supervisory boards could be required to establish an audit committee, and the committee would oversee the internal audit function; meet periodically with the external auditors, and propose to the general meeting the appointment or removal of the external auditors; (v) external auditors should owe a duty of care to the company and to shareholders and should be able to be sued for negligence in the performance of their duties.

Improve monitoring of boards by shareholders. Consider modifying the board system so that the supervisory board is elected by the shareholders and the management board members are appointed or removed by the supervisory board.

Recommendations for Improvements in External Governance

Enhance the banks' capacity to handle problem debtors through the following measures: (i) privatizing the three State commercial banks as fast as possible, through sales to strategic investors; (ii) reviewing tax rules to allow a faster build up of provisions already in the pre-privatization stage; (iii) privatizing the Consolidation Bank, or allowing the bank to auction its classified loans, or outsource collection and restructuring in exchange for collection fee.

Streamline the bankruptcy process through the following measures: (i) reducing the discretion of the court to decide whether or not to grant a bankruptcy petition; (ii) enhancing the function of the administrator by allowing any person licensed to practice law or accountancy in the Czech Republic to be eligible for appointment; (iii) making the fee structure more based on performance; (iv) allowing debtors suffering from liquidity difficulties to seek reorganization under court protection; (v) removing the obligation for debtors to demonstrate that a minimum proportion of liabilities will be able to be repaid, allowing debtors and creditors to develop any solution that best preserves their interests; including swaps of debt for equity; (vi) improving the courts' capacity to handle bankruptcy work. Creating specialist bankruptcy courts and training programs for bankruptcy judges and court officials.

Strengthen enforcement capacity. Further improvements to the independence of the Securities Commission would be desirable, and the Commission would need to develop and implement an institutional development program, including substantial training to develop the skills of its staff. Court judges and officials also need to receive training and resources to be to handle commercial disputes more efficiently.

Pension Funds

The recommendations for improvements in the regulation of pension funds can be classified into three groups. The first group contains measures that would improve the current voluntary private system without changing its basic character. The second group contains measures that would change the character of the voluntary private system, but would maintain the overall structure of the pension system. The third group would amount to a systemic pension reform, where the overall structure of the pension system would be changed.

Measures that would improve the current voluntary system without changing its character. The Government has drafted a series of amendments to strengthen the regulatory framework for private pension funds and which would: (i) require a minimum term of 36 months for pension contracts; (ii) increase the cut-off date for old age pensions to 55 from the current 50; (iii) raise the minimum capital of pension funds from CZK20 to 50 million; (iv) force pension funds to hire an independent bank as depository; (v) require official approval of any significant transfer of shares of pension funds; (vi) allow pension funds to invest in bonds and equities listed in approved foreign markets (most or all OECD countries are expected to be approved); (vii) impose a fiduciary duty on pension fund managers; and (viii) allow the Ministry of Finance to publish reports with information on individual pension funds obtained during the supervision process.

The Government should enact the proposed amendments without much delay in order to strengthen the current regulatory framework. In addition, they should also consider implementing the following additional measures: (i) continue encouraging the merger process to ensure that small funds do not undermine the integrity of the whole system; (ii) creating an independent and well-staffed supervision agency; (iii) banning investments in illiquid securities and ban or severely restrict holdings of real estate assets; (iv) introducing mandatory solvency reserves; (v) requiring a separation of own funds from participant balances, defining the treatment of unrealized capital gains, and improving asset valuation rules; (vi) segregating the assets of participants from those of the founders, asset managers, and custodial institutions; (vii) requiring the use of one authorized custodial institution; (viii) requiring either the use of licensed individual asset managers on a full-time basis, or the hiring of licensed companies as external asset managers; (ix) requiring a minimum size for pension funds to offer annuities directly, and subject annuity products to actuarial review; (x) requiring the distribution of statements to participants three or four times a year, and the provision of detailed data to the Supervision on a quarterly basis; and (xi) introducing standards on advertising by, e.g., requiring disclosure of returns over a pre-specified set of terms and comparison with the sector.

Measures that would change the structure of the voluntary private system. The measures described above do not address some basic weaknesses of the current scheme, such as its short-term orientation and its functioning on endowment insurance principles. To address these problems, the regulators may consider the following changes: (i) linking the current scheme formally to retirement; (ii) imposing a minimum contribution of around 5 percent of income; (iii) redesigning the tax treatment of pension funds with a view to adopting the EET system, and lowering the State contribution, (iv) considering a more structural move from the endowment insurance model to the mutual fund model.

Measures that would change the overall structure of the pension system. The authorities may consider the feasibility of adopting a three pillar system, along the lines of the systemic reforms recently implemented in Hungary and Poland. In the case of the Czech Republic, however, it would be important to eliminate the problems in the capital market before the introduction of a second pillar, in order to ensure that the large volume of mandatory savings would be safely and properly invested.

Insurance Companies

The authorities are considering a number of amendments designed to strengthen the regulatory framework for the sector and ensure much greater compliance with EU directives. These would include: (i) stop issuing new licenses to state-owned insurance companies; (ii) stop licensing universal insurers and limit licensing to separate life, non-life and reinsurance subsidiaries; (iii) replacing the security deposit by minimum capital requirements; (iv) applying a "fit and proper" test on the founders,

directors and senior officers of insurance companies; (v) eliminating the prior approval of policy conditions; (vi) spelling out in detail the content of business plans; (vii) applying the standard EU solvency margins, separated by life and non-life; (viii) introducing the "prudent man rule" for asset management; (ix) strengthening disclosure requirements; and notification of management changes; (x) eliminating the discriminatory treatment of brokers acting for a foreign insurance company; (xi) requiring the employment of an actuary and independent audits; (xii) strengthening supervision.

The proposed amendments should be implemented without delay, as they would address most of the problems affecting the sector, and would bring the regulatory framework much closer to the EU directives. In finalizing the elaboration of amendments, the authorities should also consider the following additional measures: (i) abolishing monopolies in motor third party liability (MTPL) and workers' compensation (the problem caused by the inadequacy of reserves for MTPL could be handled by a one time transfer from the state budget, or by imposing a special tax on motor insurance); (ii) offering tax incentives for long-term life insurance (to be determined in conjunction with the redesign of the tax treatment of pension funds); (iii) strengthening consumer protection by the creation of an ombudsman office or similar body, and by promoting the use of insurance company ratings; and (iv) adapting regulation and supervision to the growing presence of financial conglomerates (this would require implementing the co-operation agreement between the central bank, the securities commission, and the insurance supervision department, and might also require amendments to the insurance, banking and securities legislation to allow the supervisory authorities from the three sectors to exchange information and co-operate between themselves and with supervisors in other countries).

CHAPTER I: INTRODUCTION

Macroeconomic Performance After Independence

The Impressive Macroeconomic Performance in the 1993-95 Period

The Czech Republic had an impressive macroeconomic performance after the break-up of the Czechoslovak federation. As shown in Table 1.1, recovery from the transitional recession started in 1993 (the first year of independence), and gathered momentum in the following two years. Growth in the 1993-95 period was accompanied by a decline in the rate of unemployment to extremely low levels, as well as a decline in inflation to one digit levels. The current account shifted from a surplus to a deficit, but the levels of the deficit remained moderate relative to GDP, giving the impression that the Czech Republic had entered a high growth path.

Success in rapidly reducing inflation to one digit levels was due to a comprehensive stabilization program implemented still under the former Czechoslovak federation, but largely maintained after independence. The stabilization program included the fixing of the exchange rate at extremely competitive initial levels, tight fiscal policies (reflected in several years of budgetary surpluses), and initial wage discipline (leading to a compression of real wages in 1991-92).

The stabilization program did not prevent the economy from recovering. On the contrary, the very competitive exchange rate (Table 1.2) and the favorable external conditions contributed to a strong growth of exports and investment, leading GDP to grow at 3 and 6 percent in 1994 and 1995, respectively.[1] The growth recovery led the unemployment rate to drop below 3 percent. This was seen as a remarkable achievement, given that all other transitional economies had experienced an increase in unemployment to levels around 15 percent during the same period.

At the end of 1995, the Czech Republic was regarded as the clearest success story in the region. It had one of the lowest rates of inflation and the lowest rate of unemployment. The high GDP growth rate looked sustainable, as it was accompanied by a moderate current account deficit and seemed to be underpinned by important structural reforms. Major achievements in the structural area included the complete liberalization of wages, prices and foreign trade, as well as an innovative mass privatization program centered on the distribution of vouchers to Czech citizens that enabled a massive transfer of enterprises to the private sector in a very short period of time.

These achievements led the Czech Republic to enjoy the highest credit rating among all transitional economies, even though a number of important questions and puzzles still surrounded its performance. First, the unemployment rate looked extremely low by any international comparison, and particularly low in comparison with other transitional countries undergoing restructuring, suggesting the existence of redundant labour. Second, the major commercial banks remained in State hands and were experiencing severe problems in their loan portfolios. Third, although the voucher scheme had allowed a fast privatization of more than 1,700 large and medium enterprises, there were doubts as to whether

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[1] The competitiveness levels are assessed by a simple comparison between PPP and current exchange rates among the most advanced transitional economies in Central Europe. Within this sample, the Czech Republic was second only to the Slovak Republic, which shared the same initial stabilization program, and which devalued its currency relative to the Czech crown at the time of its independence.

the new owners were exercising active corporate governance and driving restructuring. These doubts were particularly strong in the case of enterprises controlled by the new investment funds, created during the voucher scheme to prevent an excessive fragmentation of ownership and to exercise governance on behalf of millions of voucher holders.

Table 1.1: Key Economic Indicators, 1993-98

	1993	1994	1995	1996	1997	1998[1]
Real GDP (growth rate)	0.6	2.7	6.4	3.9	1.0	-1.5
Industrial Production (growth rate at constant prices)	-5.3	2.1	9.2	..	..	2.5
Unemployment Rate (end of period)	3.5	3.2	2.9	3.5	5.2	7.5
Inflation (CPI, period average)	20.8	10.0	9.1	8.8	8.5	10.7
Inflation (PPI, period average)	9.2	5.4	7.6	4.8	4.9	5.5
Fixed Investment/GDP	28.5	29.6	32.8	33.0	30.7	29.0
Private Consumption/GDP	49.4	49.8	49.5	50.4	51.4	
Current Account Balance/GDP	1.3	-2.0	-2.7	-7.6	-6.1	-3.3
Exports (volume growth rate)			16.1	5.4	10.2	15.0
Real Fixed Investment (growth rate)			21.0	8.7	-4.9	0.0
Share of Private Sector in GDP	45.1	56.3	63.8	74.0	-	-
General Government Balance/GDP	2.6	0.8	0.4	-0.4	-1.2	-1.4
Gross Public Debt/GDP	19.1	18.0	15.8	13.2	13.0	..
Gross External Debt/GDP	25.3	26.1	32.6	36.4	44.8	41.0
Interbank Offer rate (3 month PRIBOR, in %)	13.1	9.1	10.9	12.0	16.0	15.3
Average nominal lending rate (in %)	14.1	13.1	12.8	12.5	13.2	13.2
Average real lending rate (deflated by the PPI, in %)	5.5	7.1	5.2	7.9	7.1	7.6
Labor Productivity (percentage change)	..	2.1	5.5	3.5	1.7	2.5
Real wage growth (period average)	..	7.1	9.1	7.3	-0.4	-0.5
Budgetary Sphere (deflated by the CPI)			7.5	10.5	-3.0	-9.0
State Enterprises (deflated by the CPI)		7.0	8.0	8.0	6.0	-2.5
State Enterprises (deflated by the PPI)			9.5	12.0	9.5	2.0
Private Enterprises (deflated by the CPI)		7.0	8.0	7.0	4.0	1.5
Private Enterprises (deflated by the PPI)			9.0	11.5	7.5	6.0
Real Effective Exchange Rate (ULC-based)	15.5	9.1	3.2	4.5	..	..

1/ Preliminary.
Source: Ministry of Finance, Czech National Bank, and IMF.

Table 1.2: Relation between PPP and Current Exchange Rates in Selected CEE Countries, 1993

Czech Republic	Estonia	Hungary	Poland	Slovak Republic	Slovenia
2.8	2.3	1.9	2.2	3.3	0.9

Source: World Bank Atlas, 1996.

The Emergence of Macroeconomic Disequilibria in 1996 and 1997

Macroeconomic performance started to falter in 1996, when the current account deficit recorded a large deficit of 7.6 percent of GDP. The external imbalance did not have fiscal roots—as shown in Table 1.1, the fiscal deterioration was minor (0.8 percent of GDP) relative to the current account

deterioration (more than 5 percent of GDP). Instead, the current account imbalance was due to a sudden drop in exports and to a strong expansion of non-Government consumption and investment.

The export slowdown was partly due to a contraction of the Czech Republic's export markets (primarily Germany), but probably also due to the erosion of competitiveness caused by the fixed exchange rate. There were doubts as to whether enterprise restructuring had proceeded at a pace sufficient to offset the real appreciation which occurred during this period. The growth of real product wages above productivity growth was more severe in State enterprises, but also affected privatized enterprises, raising doubts about the quality of corporate governance. Fast wage growth not only affected competitiveness, but also explained the consumption boom observed during this period. Finally, there were doubts as to whether the high investment ratio (33 percent of GDP) provided room for optimism, or whether there were many poor projects still being financed.

The external imbalances persisted in early 1997, leading to a fast build up of external debt and raising doubts about the sustainability of the current account deficit. The absence of fiscal roots raised more general doubts about the extent of enterprise restructuring in the Czech Republic, and the extent to which the large volumes of investment would eventually translate into a larger production of traded goods and reduce the external deficits, while maintaining growth. The increasing uncertainty eventually culminated in a series of speculative attacks on the Czech crown in May 1997, following speculative attacks in several East Asian countries during the same period.

The Policy Response

The Czech Government had already started to undertake some stabilization and reform measures in 1996, before the speculative attacks took place. The Czech National Bank had already widened the exchange rate band and increased interest rates, in order to contain domestic demand. In the structural area, the Government had implemented several changes in the regulatory framework for enterprises and investment funds. These changes were designed to improve corporate governance and respond to the growing public dissatisfaction about fraud and theft by investment fund and enterprise managers. These efforts either came too late or were not perceived as sufficient by the market.

The speculative attacks triggered additional policy measures. The Czech National Bank allowed the exchange rate to depreciate by approximately 10 percent and tightened monetary policy further, maintaining real lending rates at around 8 percent p.a. The Government made a series of adjustment in fiscal expenditures to avoid an increase in the deficit (implemented in a difficult environment, due to problems of floods and resulting pressures on expenditures), started implementing a stricter wage policy in the public sector, and announced additional financial reforms in the financial sector. These included plans to privatize the State-owned banks, and to undertake further reforms in the capital market.

The external situation has improved significantly since the speculative attacks on the crown, as indicated by the improvement in export performance and the expected halving of the current account deficit to 3.3 percent of GDP in 1998. At the same time, the reduction of the external deficit to sustainable levels has been accompanied by a sharp slowdown of GDP growth to only 1 percent in 1997, and to less than -1 percent in 1998. The recent slowdown in growth has reduced the average growth rate of the Czech economy during the whole post-independence period (1993-98) to a disappointing 2.3 percent p.a.

This growth performance looks particularly disappointing, considering the high average investment ratio (above 30 percent of GDP) maintained throughout this period. This implies

incremental capital-output ratios (ICORs) much higher than other countries with similar per capita incomes (Annex Table 1.1), and higher than the other CEE countries as well (Table 1.3 and Annex Table 1.2). The comparison with other transitional CEE countries is admittedly based on a short period, during which there were macroeconomic cycles affecting the growth performance of CEE countries in different ways, and is also affected by measurement problems. However, it does suggest that the Czech economy is growing below its potential, and that there is scope for further efficiency gains and for the achievement of higher growth rates for the same investment levels.

Table 1.3: Average Incremental Capital-Output Ratios in Selected CEE Countries

	Czech Republic	Hungary	Poland	Slovak Republic	Slovenia
1993-98	13.5	8.7	3.2	7.7	5.7
1994-98	12.0	7.1	3.0	5.7	5.5

Source: Annex Table 1.2.

The Status of Structural Reforms

The average growth performance of the Czech Republic raises the question as to how much restructuring has really taken place, and about the status of structural reforms. During the early 1990s, the Czech economy underwent the same initial round of structural reforms undertaken by other transitional CEE countries, including the full liberalization of prices and foreign trade. The Czech Republic has also maintained a reasonable degree of fiscal discipline throughout the 1990s.[2] Finally, the Czech Republic implemented an innovative voucher privatization program in 1992/94 that transferred ownership of enterprises to the private sector generally faster than in other countries.

The areas where structural transformation seem to lag are in the banking sector and in the capital market. As mentioned before, there was very little progress in implementing a well-articulated program of bank restructuring and privatization. The major banks remained in State hands, experiencing a severe problem in their portfolios (the stock of bad loans amounted to 20 percent of GDP in 1997), and assuming a rather passive attitude towards their bad debtors. This attitude was probably due to the political environment in which State banks operate, their weak capital base, and to a dysfunctional bankruptcy framework. These elements discouraged an assertive attitude by banks (relatively few bankruptcies were completed during the 1993-98 period), and resulted in the absence of a critical element in corporate governance—creditor pressure.

In the capital market, the problem was the absence of a strong regulatory and supervisory framework ensuring that privatization would result in the expected efficiency gains. Although the intense secondary trading that followed the voucher scheme did result in a greater concentration of ownership, the results fell short of initial expectations. For one, institutional investors (investment funds) did not exert the active corporate governance that was expected from them at the start of the program. Also, the liberal regulatory framework (including the lack of minority shareholder protection) and the lax supervision, opened room for abuse by several new strategic investors, at the expense of the financial health of enterprises.

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2 Unlike many other transitional countries, the Czech Republic recorded surpluses or very small deficits during most of the transition, although this fiscal performance was partly achieved by postponing bank and enterprise restructuring and the associated fiscal costs of restructuring. Other transitional countries such as Hungary, Poland, and Slovenia, implemented bank and enterprise restructuring programs at an earlier stage and had to face larger explicit fiscal costs of restructuring with an adverse impact on their fiscal balances.

The Government recognized the problems in the capital market and started implementing a series of reforms in various steps. In 1996, some amendments were introduced in the Company Law and the Investment Fund Law designed to improve transparency and strengthen shareholder protection. In 1998, a new Securities Commission was formed and endowed with strong enforcement powers. The Government also implemented a new Investment Fund Law that mandates the opening of all closed funds and is expected to eliminate under-performing institutions and clean the sector. Major reforms are also being implemented in the banking sector. The Government has privatized one major bank, has announced the privatization of the remaining banks, and has also introduced several amendments to the Banking Law designed to improve bank governance. At the same time, the Czech National Bank is adopting stringent loan provisioning rules, and pressing the banks to become more assertive towards their debtors.

These efforts are likely to result in an improved corporate governance at the level of both financial institutions and enterprises, to contribute to a better growth performance, and to facilitate a successful integration of the Czech economy into the European Union. The Government must now take stock of all these improvements, assess whether the regulatory framework is already adequate and harmonized with EU legislation in all areas of the capital market, and correct the remaining deficiencies. Also, the Government must make a special effort to strengthen supervisory capacity so as to ensure that the rules are enforced.

The Objective, Scope and Structure of the Report

The objective of the report is to contribute to the Government's ongoing efforts to improve the functioning of the Czech capital market, and enable the market to contribute more effectively to the transformation and the growth performance of the Czech Republic. Capital markets can make a contribution to growth by enhancing resource mobilization and allocation. However, they have a positive impact on economic performance only to the extent that they perform efficiently their main functions of risk diversification, price discovery, and corporate governance, while also generating additional sources of finance for enterprises.[3]

The report assesses whether the Czech capital market is able to perform its basic functions through an examination of its main institutions and the organization of its securities markets. The groups of institutions examined in the report include investment funds, pension funds and insurance companies. Although most of the public attention has been focused on investment funds, insurance companies already hold a comparable volume of assets (around 10 percent of GDP), and pension funds, although still small by comparison (their assets amount to 1.3 percent of GDP), are likely to register high growth rates in the future, due to the problems in the public pension scheme. The report does not include a detailed analysis of the banking sector, but examines the banks' contribution to enterprise restructuring, and the problems that may be affecting the banks' performance in this area.[4]

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[3] Risk diversification contributes to increased resource mobilization, an efficient price discovery function improves the selection of investment projects, and a more effective corporate control mechanism supports the efficient utilization of scarce resources. Greater access to non-bank sources of finance can reduce the overall cost of capital finance and contribute to capital formation and growth. Levine and Zervos (1998) conclude that long-run growth is significantly affected by capital market development through a comprehensive empirical analysis based on a large sample of countries.

[4] A detailed analysis of the banking sector is provided in Merril Lynch (1997).

The report is structured as follows. The second chapter assesses the development of the securities market (equities and bonds) through a comparative analysis of the traditional indicators of size, liquidity and prices. It also examines the different trading channels and the extent to which these channels are integrated so as to yield a single price for each security. A major finding is the absence of price integrity, and the need to improve regulation and enforcement, as well as market organization, so as to ensure single pricing for each security.

The third chapter deals with investment funds—the major institutional players since the market started operating. The chapter reviews their performance and the struggle to improve the regulatory framework under which these funds operate. It makes a positive assessment of the radical changes recently introduced by the Government, and identifies the further measures that have to be introduced, in order to ensure an orderly exit of the weakest institutions and a sound growth of the sector in the future. The fourth chapter makes an assessment of the progress achieved at enterprise restructuring, and reviews the internal and external mechanisms of corporate governance. It identifies the remaining flaws in governance mechanisms and the changes that have to be introduced. These include measures to improve minority shareholder protection and to strengthen the power of creditors.

The fifth and the sixth chapters deal with pension funds and insurance companies, respectively. The fifth chapter points out the serious deficiencies in the regulatory framework for pension funds, resulting in the extreme lack of transparency in their operations. A similar analysis is conducted for the insurance companies and presented in chapter six. The two chapters examine the legal amendments which are being elaborated in these two sectors and makes a number of recommendations for further improvements.

Finally, the seventh and last chapter summarizes the major findings and policy recommendations. The main body of the report is followed by three technical annexes and a statistical annex. The first technical annex provides an econometric analysis of price convergence. The second annex provides a brief analysis of the financial performance of joint-stock companies over the 1993-97 period. The third annex provides a detailed assessment of the degree of legal harmonization with EU directives in the area of securities regulation.

CHAPTER II: AN OVERVIEW OF THE CZECH CAPITAL MARKET

Introduction

The Czech Republic's capital market is unlike any other save that of the Slovak Republic, with which it had common parentage. The market was initially designed to handle secondary trading in the shares of enterprises privatized through the Voucher Privatization Program. The regulatory framework was very light, in order to facilitate secondary trading and a rapid concentration of enterprise ownership. A variety of trading channels and practices was allowed for the same reason. Secondary trading following the program was intensive, and ownership is now concentrated in fewer hands. However, there is a general perception that the process of ownership concentration was accompanied by non-transparent deals and price manipulation. In several cases, too, new owners obtained control for personal gains, acting against the interest of the enterprises, minority shareholders and creditors.

The structure and the regulatory framework of the Czech capital market have changed substantially year by year, and are still rapidly evolving under commercial and political pressures. The capital market today is operated by a greater number of skilled professionals, its structure has improved, it has a much better regulatory framework, and is supervised by a new and independent Securities Commission. However, the market still suffers from important deficiencies that undermine its central role in price discovery, and restrict its importance as an instrument of risk diversification, a mechanism for strong corporate governance, and a complementary source of finance. These deficiencies should be corrected in order to allow the market to contribute more effectively to resource allocation and economic growth.

This chapter provides an analysis of the securities market, both the equity and the bond markets. The second section reviews briefly the voucher privatization program, as this review is essential to understanding how the securities marked has evolved. The third section provides an overview of the equity market, by examining the traditional indicators of size, liquidity, and prices. The fourth section examines the organization of the market, highlighting the variety of alternative trading channels. The issue of market fragmentation and multiple pricing is examined in more depth in section five. The sixth section reviews briefly the bond market. The seventh section provides an overview of the regulatory framework and the final section makes an overall assessment and provides some policy recommendations.

The Origins of the Czech Capital Market: The Mass Voucher Privatization Program

The privatization program in the former Czechoslovakia was launched in 1991 as the centerpiece of a comprehensive economic reform program formulated in 1990. After the restitution of some property to the original owners, and the completion of "small-scale privatization" in 1991 (involving the auction of some 24,000 small establishments), the Government decided to divest most of the medium and large enterprises through an ambitious mass privatization program. The program allowed a range of privatization methods, but was effectively centered in a voucher privatization scheme. The voucher scheme was carried out in two waves, and amounted to auctions of enterprise shares for vouchers, which were distributed to the public at a symbolic price (each citizen could purchase one voucher book for CZK1,000, or US$35).

In the voucher scheme, individuals could either bid directly for enterprise shares in the auctions, or place their vouchers in investment funds, which then used the vouchers to bid for the enterprises.

These investment funds were introduced in order to prevent an excessively dispersed ownership and very weak corporate governance in the aftermath of privatization. In the first wave, the investment funds were all closed-end funds and constituted as joint-stock companies. Individuals had voting rights, but the funds did not have the obligation to redeem their shares (they could sell their fund shares in the secondary market, however). In the second wave, closed and open unit trusts were also allowed. Funds created as unit trusts did not offer voting rights, but the open-end trusts allowed individuals to redeem their fund shares after a period of three years.

The first wave was carried out in 1992 in the former Czechoslovakia and included 988 enterprises in the Czech Republic. The auctioned shares represented half of the book value of the firms in the program, and led to some 6 million Czech citizens (60 percent of the population) becoming shareholders in a very short period of time. Out of this total, approximately 1.8 million bid directly for shares and 4.2 million (70 percent of the total) placed their vouchers in investment funds. The funds' success in attracting most of the vouchers was due to a promise by several funds to redeem their own shares at CZK10,000 (US$350)—ten times the value of each voucher book. The funds felt that they could keep this promise after calculating that each voucher book would buy about CZK30,000 in enterprise assets.

The second voucher wave was implemented in 1994 only in the Czech Republic, and involved the sale of 861 enterprises in a similar fashion (the Slovak Republic abandoned the second voucher wave after the break-up of the federation in 1993, in favour of direct sales). Approximately 6.2 million Czech citizens participated in the second wave, of which 36 percent bid directly for shares and 64 percent placed their vouchers in investment funds and unit trusts.

The two waves resulted together in the privatization of about 1,800 enterprises, with a market value estimated at around 30 percent of GDP in 1997. The Government still holds approximately 40 percent of this total (12 percent of GDP), due primarily to its large majority holdings in high value utilities and banks. The investment funds and unit trusts initially held about 70 percent of the rest, or the equivalent of another 12 percent of GDP. Their holdings of equity have declined to 50-60 percent of the rest, however, as result of sales to other investors and diversification into bonds and other assets. The remaining balance is held by individuals, strategic investors, and other institutional investors, such as pension funds and insurance companies.

In 1998, there remain 5 million Czech registered shareholder accounts at the Securities Centre, the registrar for publicly traded companies and investment funds. That implies that more than 1 million citizens have disposed of their share-holdings in investment funds and privatized enterprises. Another 1 million are void and dormant and will be cancelled if they remain inactive for twelve months.

The main thrust of the voucher scheme was to move enterprises rapidly from the control of the State into private ownership. At the same time, there was an ultimate intention to have the shares concentrated in few hands, in order to bring pressure on managers to perform well. It was expected that secondary trading would lead investment funds to concentrate shareholder power in the early stages of the program, and that strategic investors would eventually be able to gain control of several enterprises through purchases of shares in the secondary market as well.

Market activity following voucher privatization was intense, facilitated by a liberal regulatory framework and a multiplicity of trading channels, and secondary trading has indeed resulted in greater ownership concentration (Chapter 4). However, there is conflicting evidence on whether the investment funds have generally enhanced corporate performance. It is certain that several fund and

enterprise managers took advantage of the fragmented market structure, the light regulation, and the absence of supervision, to abuse their position of control and extract personal gains. The authorities responded by tightening the regulatory framework in several steps, and by creating an independent supervisory agency. Although these are very positive developments, this report will argue that the development of an efficient capital market and the restoration of public confidence are medium-run goals that will require further efforts in regulation and enforcement, as well as improvements in market organization.

An Overview of the Equity Market

An Analysis of Traditional Market Indicators

The Czech capital market appears to be very well developed, judging by the traditional indicators of size and liquidity, and securities seem to be traded at prices that look reasonable in relation to earnings and book value. As shown in Table 2.1, more than 2,100 stocks were traded in 1997 (both inside and outside the Prague Stock Exchange),[5] and market capitalization amounted to around 30 percent of GDP. These two traditional indicators of size suggest a large market--much larger than other transitional and developing countries, comparable to some developed countries in Western Europe, and only smaller than countries with a long tradition of capital markets, such as the UK and the US. In fact, the ratio of new share issues to GDP make the Czech capital market look even more developed and important as a source of finance than these mature markets.

Table 2.1: Equity Market Indicators, 1996 and 1997

Country	Number of Companies with Shares Listed	Market Capitalization (% of GDP)	Value of New Share Issues (% of GDP)	Turnover (% of GDP)	Turnover / Capitalization (%)	Average P/E
Czech Republic	2179	30.1	2.2	34.7	115.6	13.7
Hungary	44	11.3	1.2	3.5	31.1	17.5
Poland	83	6.2	0.3	4.1	66.0	14.3
Turkey	229	17.1	1.1	20.9	122.7	12.2
Portugal	158	23.0	0.8	6.7	29.0	16.0
Greece	224	19.7	0.5	6.7	34.3	11.9
South Korea, Rep. of	760	28.6	-	36.6	127.7	16.0
Chile	291	95.3	3.4	12.2	12.8	13.3
France	740	38.2	-	62.8	164.5	
Germany	700	28.3	1.4	33.5	118.5	20.7
Netherlands	185	94.1	-	42.9	45.6	17.8
United Kingdom	2046	141.8	1.2	50.8	35.8	15.9
USA	2271	105.5	1.4	57.0	54.0	23.9

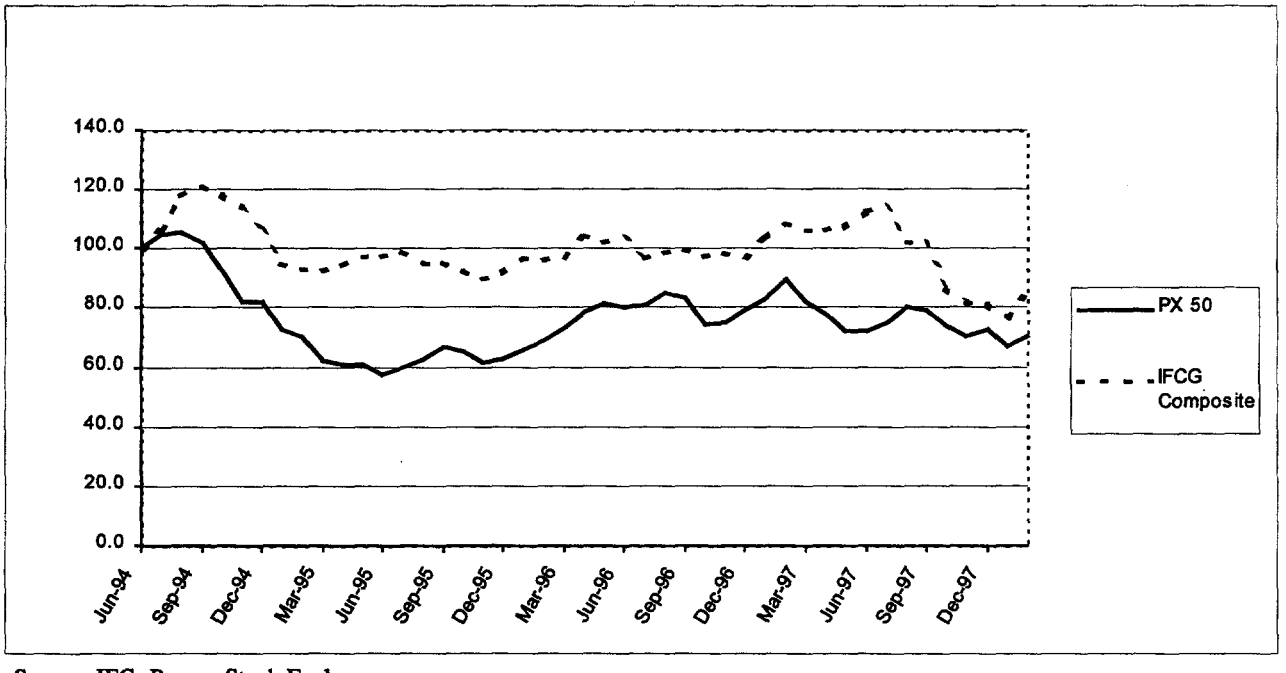
CEEs: Number of companies and P/E from FIBV, all other data from IFC.
Capitalization: Domestic companies, excluding investment funds, end of period
Turnover: Domestic companies, including investment funds
Number of companies with shares listed: Domestic companies, end of period
Source: IFC, FIBV, IMF, Linne (1998).

5 The total number of publicly tradable joint stock companies. It includes about 1,700 companies privatized through the voucher scheme and more than 400 investment funds and unit trusts.

Market liquidity also seems to be very high, judging by two traditional indicators--turnover to GDP and turnover to market capitalization. Again, the liquidity indicators are generally higher than those of other transitional and developing countries, and comparable to those of developed countries. These levels of liquidity are surprising for a market which has been operating only for five years.

The average price-earnings (P/E) ratio is in line with the historical averages of developed countries. By illustration, the historical average P/E ratio in the US is 14, and most other developed countries have similar historic ratios.[6] Finally, stock prices in the Prague Stock Exchange seem to be reasonably well correlated with the IFC Global Index (Figure 2.1), suggesting some degree of integration with international equity markets. Overall, the market seems to have emerged from the transitional stage and appears to be comparable with mature markets, in terms of its significance within the economy and the valuation put upon corporate assets and earnings.

Figure 2.1: The Prague Stock Exchange Index and the IFC Global Composite Index June 1994 – February 1998



Source: IFC, Prague Stock Exchange

The traditional indicators do not provide an accurate picture of the actual state of development of the Czech capital market, however. As mentioned in the preceding section, the Czech capital market is unique, in having been used to implement a large-scale voucher privatization program. Other transitional countries have also resorted to coupon privatization as part of their privatization program, but the relative scale of these programs has been generally smaller than those of the Czech Republic.

Although the Czech capital market did develop in many respects during the 1990s, the traditional indicators exaggerate the extent of such a development, and do not capture a number of functional problems. First, the market is not so large as it may seem, as market capitalization figures are affected

6 The average P/E ratio in the US equity market in 1990s has been significantly above the long-run historical averages. See, e.g., Cole et al (1996), and Golob and Bishop (1997).

by double counting, the public sector still retains large holdings of important enterprises, and most of the shares are not actively traded. Second, the data on new issues is clouded by the aggregation of new cash issues with non-cash introductions to the market. Third, the market is not nearly as liquid as it appears to be, because high turnover figures reflect not only double counting, but also a number of large and non-transparent transactions that followed the second wave of mass privatization. Finally, official prices mask extreme differences in stock prices across enterprises of different sizes, and of the price of the same stock in different segments of the capital market.

A Reassessment of Market Size

It is possible to assess the true size of the Czech market by making a few adjustments based on estimates of the size of public sector and investment fund holdings. The State holdings of enterprise shares (through the National Property Fund) account for approximately 40 percent of the capital of privatized companies and should be deducted, as they are not traded. Of the balance, some 50-60 percent is currently owned by investment funds, unit trusts and holding companies. The value of these intermediaries' shares is added to that of the securities in which they are invested, which means that they are double counted. Furthermore, the funds' own shares and units are currently valued at an average discount of about 40 percent, relative to the portfolio value of the shares in which they are invested (Chapter 3). Taking these factors into account results in a large reduction in the equity market capitalization ratio--from 30 to 14 percent of GDP (Table 2.2), a value which is more comparable with other transitional countries and countries with the same level of per capita income.[7]

Table 2.2: Adjustments to the Market Capitalization Ratio, 1997

	US$ billion	% of GDP
Total market capitalization	14.3	30.1
- State holdings (40 percent)	5.7	12.0
= Balance in private ownership	8.6	18.0
- Investment fund holdings (60 percent)	5.1	10.8
= Residual in private hands	3.4	7.2
+ Market value of investment fund shares (40 percent discount)	3.1	6.5
= Adjusted market capitalization	6.5	13.7

Source: Prague Stock Exchange, Staff calculations

A Reassessment of the Importance of the Primary Market

The Czech stock market appears to have been the source of a larger proportion of primary capital than the stock markets of Hungary and Poland, or indeed of the UK and US. However, these figures do not discriminate between money raised for industry, money raised for banks, unit trust offerings, and other factors. As shown in Table 2.3, not only is the money raised for industry very small, but also the figures as a whole combine introductions to the market in which no new money is raised, with genuine public offers. Thus the large figures for 1993 and 1994 are clearly a reflection of mass privatization. The Ministry of Finance (MoF (1997)) has observed that new shares are issued in only about one-third of cases with the aim of increasing equity, and in only one-tenth of cases on behalf of

7 As discussed below, the market capitalization ratio could be further adjusted downwards considering that several enterprises now have a controlling shareholder whose shares are not traded in practice. However, this problem affects primarily the 1,500 medium and small enterprises in the total universe of privatized companies, and these enterprises account for a minor part of total market capitalization (the largest 60 enterprises account for almost 90 percent of total market capitalization).

industry. In many cases, new issues are aimed to change the structure of control over the firm rather than to bring new capital to the firm.

Table 2.3: New Share Issues (% of GDP)

	1993	1994	1995	1996	1997
Shares and Units	33.8	33.8	7.3	3.3	2.2
Banks	10.2	1.2	2.5	0.5	0.7
Industry	11.8	17.2	1.8	0.5	0.1
Other (mostly units)	11.8	15.4	3.0	2.3	1.4

Source: Securities Exchange Commission.

A Reassessment of Market Liquidity

The high turnover figures for the Czech Republic are perplexing, because participants in the market do not regard it as liquid, and frequently point out that there are only four consistently liquid stocks in the whole list of those 2,000 traded (SPT Telecom, Komercni Banka, CEZ and Unipetrol). Although there are no detailed data to make an in-depth analysis of this problem, there are strong reasons to believe that the official indicators overstate the true turnover by a multiple.

First, there is multiple counting of transactions due to the structure of the market and the associated dealing practices.[8] Second, there is a significant volume of dealing associated with the building up of strategic stakes in privatized companies, by acquiring small quantities of stock from the public and consolidating them. As observed by the MoF (1997), "The high trading volume on the capital market is primarily due to the accumulation of shares in several stages and the transfer of these shares to a new owner in a single act. Thus one actual deal is registered probably several times." Third, much of the transactional activity is not the conventional portfolio investment that dominates transactions in other countries. In addition to the large-scale acquisition of control of enterprises mentioned above, there are also other idiosyncratic transactions, such as the conversion of numerous investment funds into holding companies (Chapter 3), and fraudulent transactions with securities.

Finally, the high degree of market segmentation also tends to impair liquidity, and this factor is not reflected in turnover ratios. As discussed below, the Czech market is segmented between small retail trades, normal institutional trades, and exceptional "control" and unethical trades, and there is a lack of articulation between the segments, because many of the exceptional trades are conducted collusively or in secret, and cannot interact with the formal market. Therefore, it may be stated that the official turnover figures overestimate market liquidity by a wide margin, due to double counting and special factors.

A Reassessment of the Value of "Official" Stock Market Prices

As mentioned before, average price-earnings ratios have been at levels comparable with other countries, and the Prague Stock Exchange index has been tracing the movements of international indices reasonably well, giving the impression that price integrity holds in the Czech capital market. However, the "official" prices used in the computation of stock market indices, price-earnings ratios,

8 It is widely recognized that cross-country comparisons of turnover are hindered by differences in market structure--dealer markets versus broker markets, markets which include only on-market transactions versus those which include all trades, "customer" business versus "intra-market" trades, etc. The Czech market has substantial amount of dealer activity and intra-market business (between brokers) which ought to be scaled down for the purposes of international comparison.

and the valuation of financial intermediaries are the auction prices in the Prague Stock Exchange, which account for a very small share of total trade. As shown below (sections 4 and 5), most transactions are negotiated off-market, and frequently at prices which differ significantly from official prices.

The absence of price integrity is a serious problem, as it implies that the market is not performing its key price signalling function well. This could have adverse effects for the allocation of capital in general, and distort credit assessment and the valuation of companies and financial intermediaries. Although there are signs that price divergence is subsiding, the quality of pricing for all but the leading, liquid stocks remains deficient because of the lack of transparency in trading, poor corporate disclosure, and also because there is still scope for unacceptable anomalies between on and off market trades.

An Examination of Price-Earnings Ratios

While the average price-earnings ratios (P/E) in the Czech market may accord with international norms, there is a very wide dispersion, and the valuation of small companies appears to be anomalous. As shown in Table 2.4, since 1993 the P/Es of medium and small enterprises have declined to extremely small levels. Note that the P/Es for 1997 are computed excluding loss-making firms, in order to avoid distortions in the computation of the average P/E ratio.

The question arises as to whether the low P/Es are due to measurement problems, market inefficiencies, or other factors. The low P/Es of some medium and small companies may be partly due to measurement problems—as discussed below (section 5) the prices of the Prague Stock Exchange auctions used to calculate P/Es have been usually below prices of direct trades conducted off-market. However, this measurement problem is not likely to explain why P/Es are so low—even if off-market prices were 100 percent or more above auction prices, the P/Es would still be extremely low.

The low P/Es can also be explained by a rational market response to the uncertainties surrounding several medium and small enterprises. Most of these enterprises now have a controlling shareholder or a group of affiliated shareholders who are not interested in buying the remaining shares, because they have already acquired control. At the same time, there may be little interest from outsiders in buying shares of an enterprise controlled by an insider without adequate disclosure and minority shareholder protection. This may happen even in situations where the enterprise generates a reasonable return on equity, which is frequently not the case—as shown in Annex 2, the average return on equity has been generally low, and particularly low in the case of medium and small firms. In sum, the very low P/Es of small firms seem to be due to very low profitability, lack of adequate disclosure and minority shareholder protection, and the great uncertainty generated by the combination of these factors.[9]

The very low prices of the shares of medium and small firms could also be due to obstacles to an increase in the demand for these shares through take-overs. The few outsiders who could be interested in taking advantage of the low price and buying the shares, may face serious problems in identifying and reaching minority shareholders (as shown in Chapter 4, there are still legal restrictions for outsiders to obtain information on the identity of minority shareholders).

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9 Under simplifying assumptions, the P/E ratio is equal to POR/(R – ROE*RR); where POR = payout ratio, R = market capitalization rate, ROE = return on equity, and RR = retention ratio (see, e.g., Leibowitz et al (1996)). Very low P/Es could be due to situations where R >> ROE, either because of very low profitability, or because of a high risk premium built into the discount rate R.

Table 2.4: Ratios of Prices to Earnings (P/E) and Book Value (P/BV) by Size, 1993-97

	Price-Earnings Ratio (including loss-makers)					P/E (excluding loss-makers)	P/BV
	1993	1994	1995	1996	1997	1997	1997
1-60	17.9	10.6	9.6	10.3	18.0	15.3	1.1
61-100	28.5	17.0	9.6	7.1	14.3	10.6	0.6
101-200	-35.3	22.3	4.3	3.8	31.0	3.3	0.2
201-500	11.9	11.6	2.4	3.1	50.4	1.5	0.1
501-1602	106.1	7.8	1.2	1.9	-1.0	0.7	0.04
All firms	23.2	11.5	6.0	8.6	20.4	12.2	0.7

Source of raw data: Aspekt.

The Structure of the Equity Market

Basic Organization of the Market

The Czech securities market is characterised by the multiplicity of dealing channels. As illustrated in Figure 2.2, investors have three options to route orders. They may pass them to a broker for execution, they may deal on the RM-System (RMS), or they may deal privately with another investor and arrange for the transfer of ownership at the national securities registry, known as the securities centre (SCP). A broker has, in turn, three dealing choices. He may operate as a member of the Prague Stock Exchange (PSE), deal on the RMS or, more recently, deal bilaterally with another member of the PSE off-exchange and settle through the PSE's Univyc subsidiary (until mid-1997 PSE member brokers were permitted to deal privately and settle at the SCP, but that is no longer permitted).

The PSE and the RMS both started operations in 1993, accepting trading in the stocks of any publicly traded company. The PSE was originally designed as a regular stock exchange, whereas the RMS was created primarily to conduct retail trade in the aftermath of voucher privatization, through a national network of communications and branches. The PSE has recently restricted listing to the 300 largest stocks, but the RMS continues to trade the stocks of the more than 2,000 publicly traded companies and funds.

Each of these two organized markets also offers a choice of dealing channels. The PSE has two electronic, order driven systems--an automated single price auction "fixing" and a continuous auction (Kobos). In May 1998 it introduced a quote-driven, dealer system (SPAD). Exchange members are also permitted to match orders privately outside the central market system, and then report to Univyc, the PSE clearing house, and settle through it. These trades may be reported either as "direct trades" or as "Univyc trades". Direct trades are passed through the Stock Exchange and settled on a delivery versus payment basis, whereas Univyc trades are passed immediately to Univyc and may involve delivery free of payment. The RMS offers a continuous auction, block trades, and direct trades.[10]

10 The PSE has maintained a single price auction since the start of its operations in 1993. Under this system, all orders are aggregated and matched at the single price at which the greatest number would execute. Since 1996, the PSE also offers a continuous auction facility. Under this system, the trading day starts with a single price auction to clear outstanding orders received since the last trading day, and to set the opening price for the current trading day. Thereafter, orders are matched and executed at a variety of prices during the course of the day. The RMS offers a continuous auction system only.

As shown in Table 2.6, there have been important changes in the pattern of securities dealing in the recent years. Direct trades through the SCP, which were completely off-market and accounted for 56 percent of total trade, now account for less than 2 percent of the total. Trading through the PSE and Univyc account together for almost 90 percent of total trade. However, the auction systems operated by the PSE and RMS still account for a very small share of total trade. The new dealer system operated by the PSE (SPAD) has attracted a significant volume of trade since its creation, but also still accounts for a modest share of total trade.

Figure 2.2: Diagrammatic Representation of the Czech Securities Market

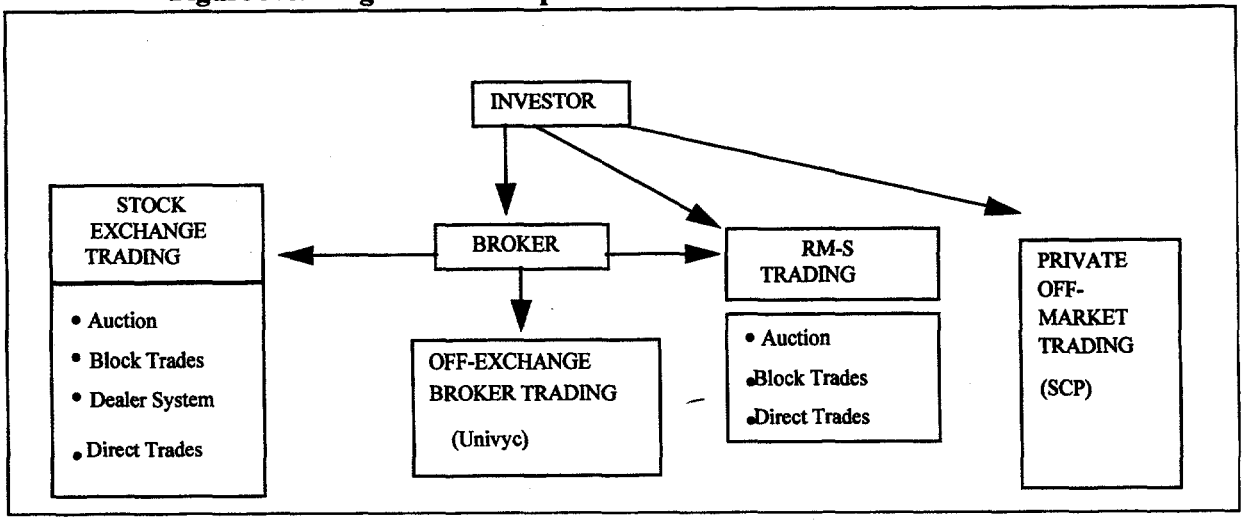

Table 2.6: Turnover of Securities in Different Trading Channels, 1995-98

	1995		1996		1997		1998 (Q1)		1998 (Q2)	
	CZK bil.	%	CZK bil.	%	CZK bil.	%	CZK bil.	%	CZK bil.	%
PSE	195.3	38	393.2	35	679.5	55	111.8	35.3	256.2	48.2
Direct Trades								33.7		41.8
Block Trades								0.5		0.0
Fixing								0.6		0.2
Kobos								0.5		0.3
SPAD								0.0		5.9
RMS	27.3	5	100.7	9	158.7	13	51.9	15.7	43.9	8.3
Direct Trades								0.6		7.9
Auction								0.6		0.4
Crosses								0.0		0.0
Block trades								0.0		0.0
Total On-market								51.7		56.5
Univyc (Direct Trades)							114.7	36.2	221.2	41.6
SCP (Direct Trades)	291.7	57	629.6	56	392.5	32	38.3	12.1	9.7	1.8
Total Off-market								48.3		43.5
TOTAL	514.2	100	1123.7	100	1230.7	100	316.7	100.0	531.0	100.0

Source: Securities Exchange Commission.

The electronic auction systems operated by the PSE and the RMS were suited to dealings by small investors, but were not appropriate for institutional and professional investors who want to negotiate a price and who do not want to expose their intentions on a public order book, either because they do not want to move the price against them, or because the transaction involves price manipulation against other shareholders. Large investors fell back on off-market dealing, settled informally at the SCP branches or on direct trading under PSE rules. The securities market came to comprise a transparent but small retail market organised through auctions at the PSE and the RMS, and a large but

opaque wholesale market organized through direct trades at the SCP, Univyc, PSE and RMS. The introduction of the SPAD system has greatly improved transparency in the wholesale market, but it still applies to a small volume of trade.

Trading in the second half of 1998 was strongly influenced by investment fund disposals of ordinary shares to strategic investors. Often these disposals were co-ordinated so that strategic investors could acquire a controlling stake and the prices reflected the control premium—there is anecdotal evidence that prices were from twice to several times those reported in the "official" auction market. Notwithstanding the great improvement in market centrality, these large block trades appear to have been conducted on an inequitable and non-transparent basis. Small shareholders had no opportunity to participate in what amounted to take over offers.[11]

Clearing and Settlement

Settlement arrangements in the Czech market are dominated by the SCP, which acts as a registrar for ownership of virtually all common stock. However, it has to be supplemented by agencies to clear trades and to effect the cash side of settlement. In the RMS, clearing and settlement are integrated with trading and settlement is immediately post trade. In the PSE, clearing and settlement are on Trade Day plus 3 (T + 3) for auction trades and up to T + 15 for direct trades. There are no formal rules for bilateral settlement in off-market transactions settled at the SCP, but normal practice has been for the counter-parties to agree a settlement day at the time of the trade.

In the event of a default on settlement of a central market trade, the Guarantee Fund of the PSE intervenes to ensure completion and the member has three days in which to fulfil its obligation to deliver or to pay. The same does not apply to direct trades, responsibility for which is exclusively between the members concerned.[12] The parallel operation of different settlement systems and the absence of harmonization between them has added to the problems of the market and has been an additional impediment to achieving price integrity. In 1996, the MoF requested proposals to build and operate a Universal Clearing Centre. A joint proposal of the Univyc, RMS and the SCP was finalized and approved by the MoF in November 1997, but was turned down by the PSE, on the grounds of risk and cost.

This convoluted structure has not been conducive to an efficient operation of the capital markets. The operational problems caused by the existence of parallel markets could have been overcome or substantially reduced by the use of such techniques as consolidated price display, consolidated settlement, and free order-routing. However, failure to develop these techniques has inhibited best execution and market arbitrage and has contributed to the absence of price integrity and the slowness of price convergence.

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11 In some cases, the mandatory buy-out provisions of the commercial code should have been invoked, but the buyers did not reveal themselves as single investors or as concerted parties. These operations have reinforced the impression that it is essential to introduce further improvements in regulation and enforcement. These would include reducing the minimum percentage to trigger a mandatory buyout and enforcing more effectively disclosure requirements (see Chapter 4).

12 These arrangements are to be modified for the introduction of the dealer market (SPAD). The main changes will be a move to trade by trade processing in place of batch processing, an integrated stock lending facility, and the extension of the Guarantee Fund coverage over all the dealer market trades.

The Absence of Price Integrity in the Market

The Evidence of Price Divergence

There seems to be general agreement among the Government and market participants that the market is still fragmented and non-transparent, and that prices are distorted. A recent analysis of the MoF (1997) concluded that "there is no objectively determinable price for most securities as the price creating function of the market fails to operate". The reliance on official prices based on central market mechanisms which handled only 5 percent of trading volume in equities was cited as a particular weakness. However, there has been no quantitative analysis measuring the extent of price distortion. This report makes an effort to fill this gap, by providing an analysis of stock price behaviour across different market places from January 1996 to March 1998. This section presents the main results, whereas a more detailed analysis is provided in Annex 1.

There are two sets of data: (1) volume-weighted average monthly prices for the 100 largest firms on the PSE (auctions and direct trades), the RMS (auctions and direct trades) and the SCP (direct trades); and (2) monthly minimum and maximum prices of all traded firms on the PSE (auctions and direct trades) and the SCP (direct trades). The sample includes 2,700 observations on the volume weighted average monthly prices for the 100 largest enterprises and 42,000 observations on monthly minimum and maximum prices for 2,277 securities. The analysis uses auction prices in the PSE as the benchmark prices for the purpose of comparison.

As expected, the differences between average prices of the 100 largest firms in the RMS auctions and the PSE auctions is very small, irrespective of whether the average is unweighted or weighted by size (Figure 2.3). The cross-firm standard deviation of the average price difference is also small, indicating that this result holds for all 100 firms. However, there are larger differences between average prices in other marketplaces and PSE prices. Moreover, the differences are larger in the case of the unweighted average, indicating that price divergence is more pronounced in the smaller firms (and suggesting that price differences for the remaining 2,000 companies could be even larger). The standard deviation of average price differences is quite high, confirming that for several firms price differences across different markets can be sizeable. Econometric testing (presented in Annex 1) confirms the existence of significant differences in average prices across different marketplaces (except for the PSE and RMS auctions).[13]

The analysis of price spreads (the percentage difference between the maximum and minimum prices of each stock) for all firms also revealed significant price divergence across different marketplaces (Figure 2.4). Whereas the average spreads on the PSE (auction and direct trades) were relatively stable over time, at around 10-20 percent, SCP price spreads were very large, starting at about 80-90 percent in January 1996 and coming down to about 40-60 percent in early 1998, depending on whether the averages are weighted or not.[14] The standard deviation of average price

13 The average SCP prices have fallen below the average auction prices in the last six months. This could be explained by the fact that the SCP price series incorporates security lending and repurchase agreements from September 1997, and these agreements can be conducted at any price. This point was clarified by the Securities Commission.

14 To the extent that the auction trades only generate one price at a time their spreads can only indicate the intra-month high low and not a fragmentation in which the same stock is dealt in at different prices at the same time. The auction spreads are, therefore, an indicator which may be compared with the direct trade and SCP spreads and the differentials regarded as indications of anomalous or fragmented price formation.

spreads is also very high, indicating that differences in price spreads can be substantial for a large number of firms. This result is confirmed by econometric testing of the series and holds if the sample if restricted to the 100 largest firms (Annex 1).

The very wide SCP spreads were due both to higher maximum prices and lower minimum prices (Annex 1). The minimum prices at SCP were often only a few crowns, bearing no relationship to market prices at all. Although this could be due to price manipulation, it could also be due to the fact that SCP is used for transfers of an administrative nature, which may require a nominal price to be assigned to the stock. Therefore, an analysis was conducted using maximum price comparisons, instead of average spreads. As shown in Figure 2.5, the results reveal a large premium of SCP maximum prices over PSE auction and direct price maxima, peaking at about 300 percent at the end of 1996, but declining to 50-100 percent since then. Although this decline in the difference between average maximum prices is a positive development, the average difference is still high, and so is the standard deviation, indicating that there is still a significant price divergence across marketplaces.

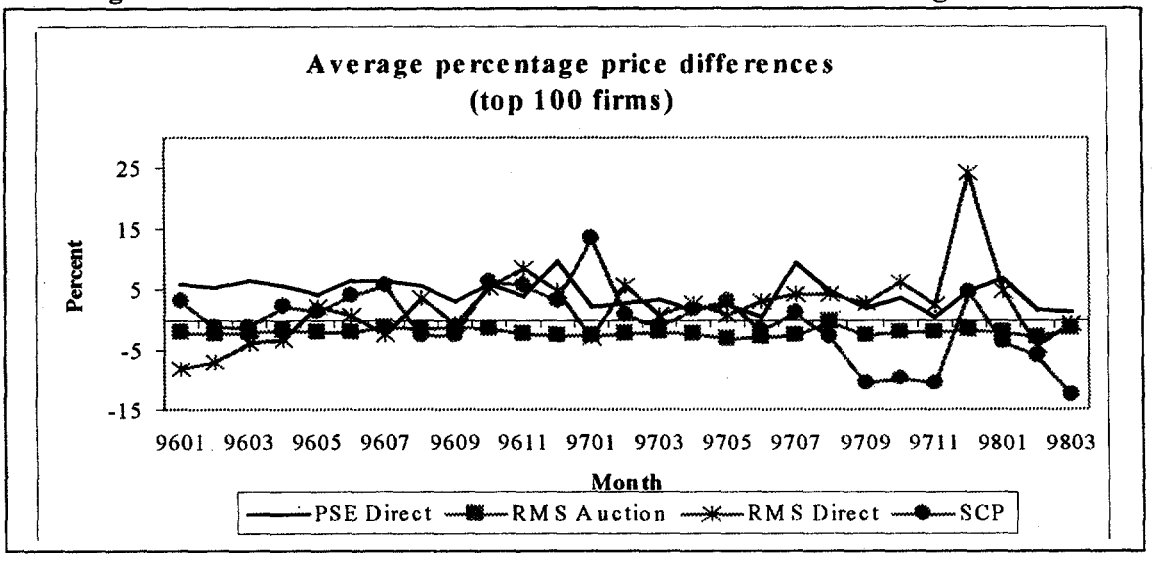
The Rationale for a Dysfunctional Market

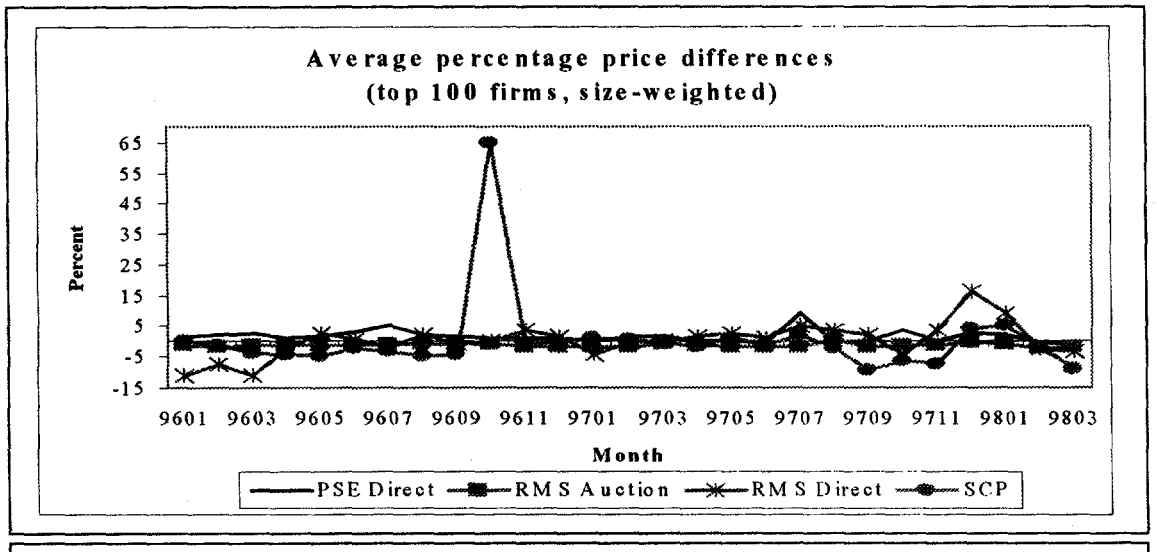
Four possible factors have been identified to explain the persistence of price differences, namely: (i) technical impediments to arbitrage between different dealing channels; (ii) cost of consolidation of odd lots; (iii) premia for control; and (iv) various other transactions with securities involving fraudulent pricing. It is important to note that the first two factors are primarily connected with deficiencies in the organization of the market, whereas the last two factors are more closely related to regulatory/supervisory failures to prevent abuse and the exploitation of minority shareholders.

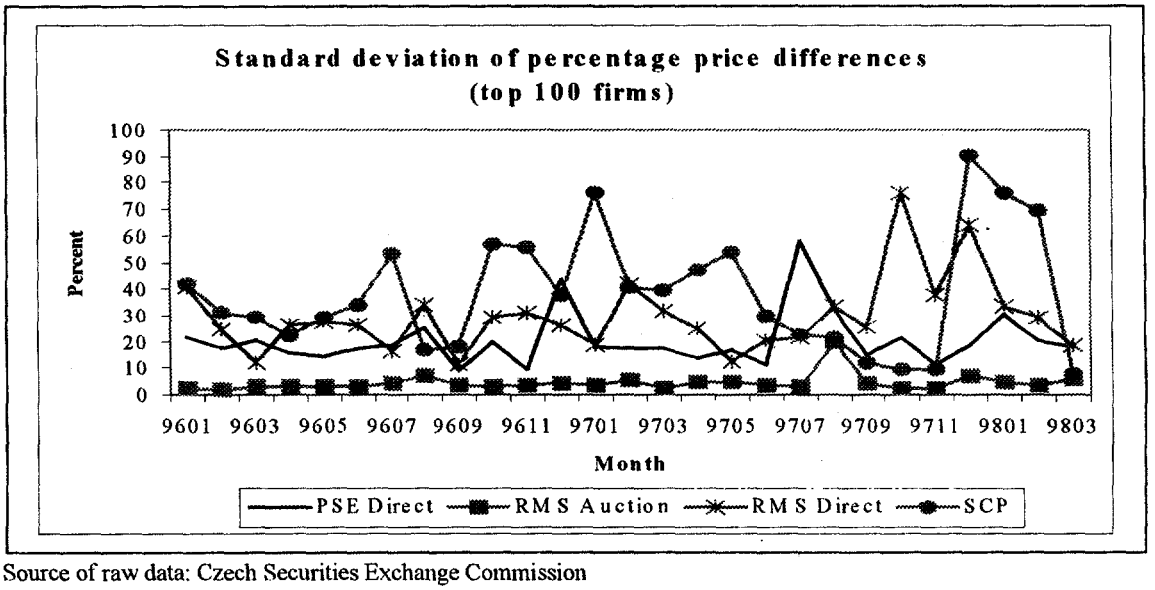
The lack of harmonized dealing and settlement systems may have contributed to the persistence of price differentials between marketplaces. There are some obstacles to full and fast arbitrage, even between the PSE and RMS auctions.[15] The lack of a single settlement system also increases the costs of consolidating a large number of small orders to make up a tradable block (comparable with consolidating odd lots into round lots in other markets). However, neither of these two factors is sufficient to explain a large part of the price differences.

15 The PSE operates on T+3 settlement, the RMS on same day settlement. A buyer of cheap stock on the RMS could sell on the PSE, but would then have to wait three days or more before RMS would accept his next buying order.

Figure 2.3: Differences between Stock Prices in Different Market Segments

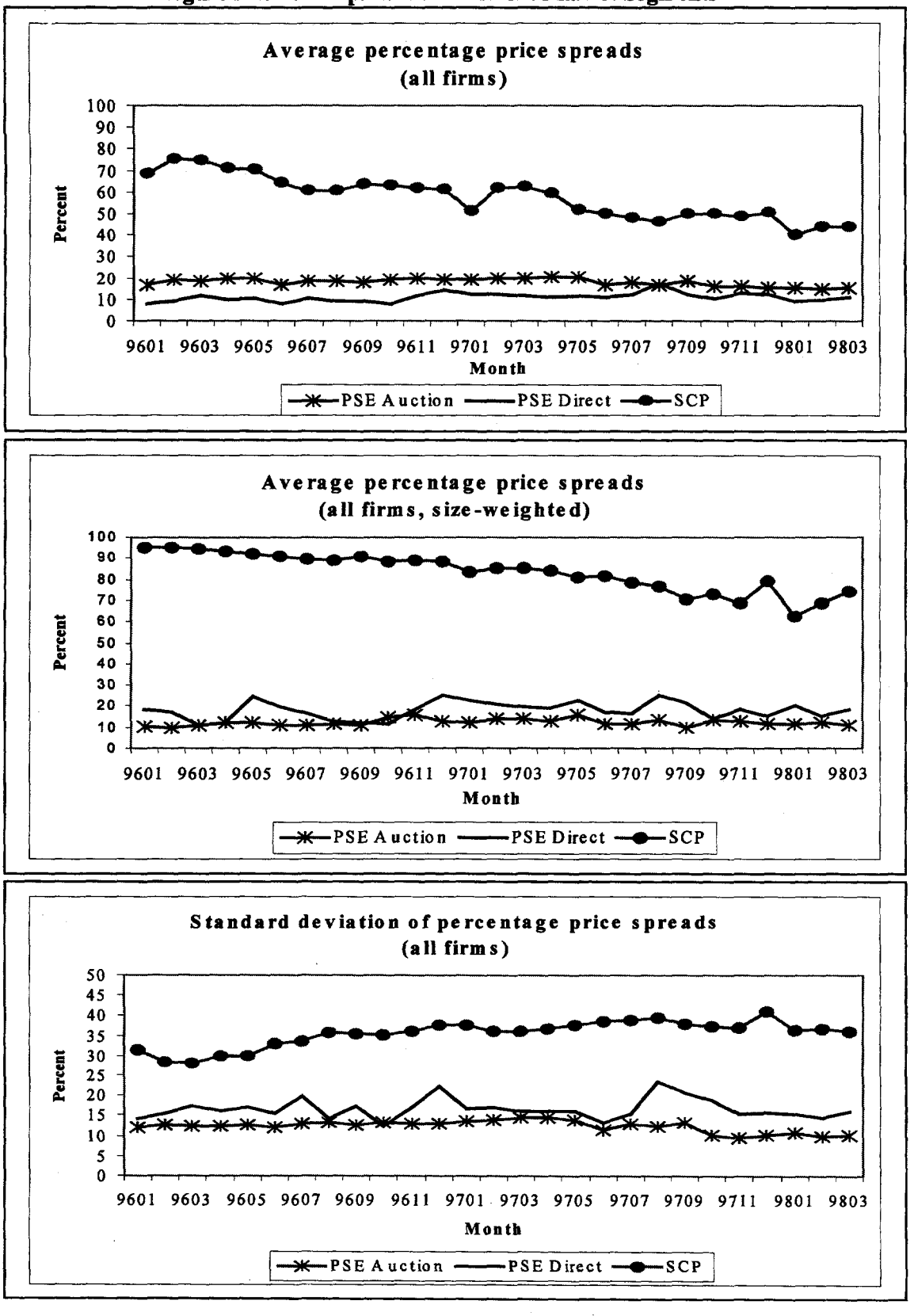






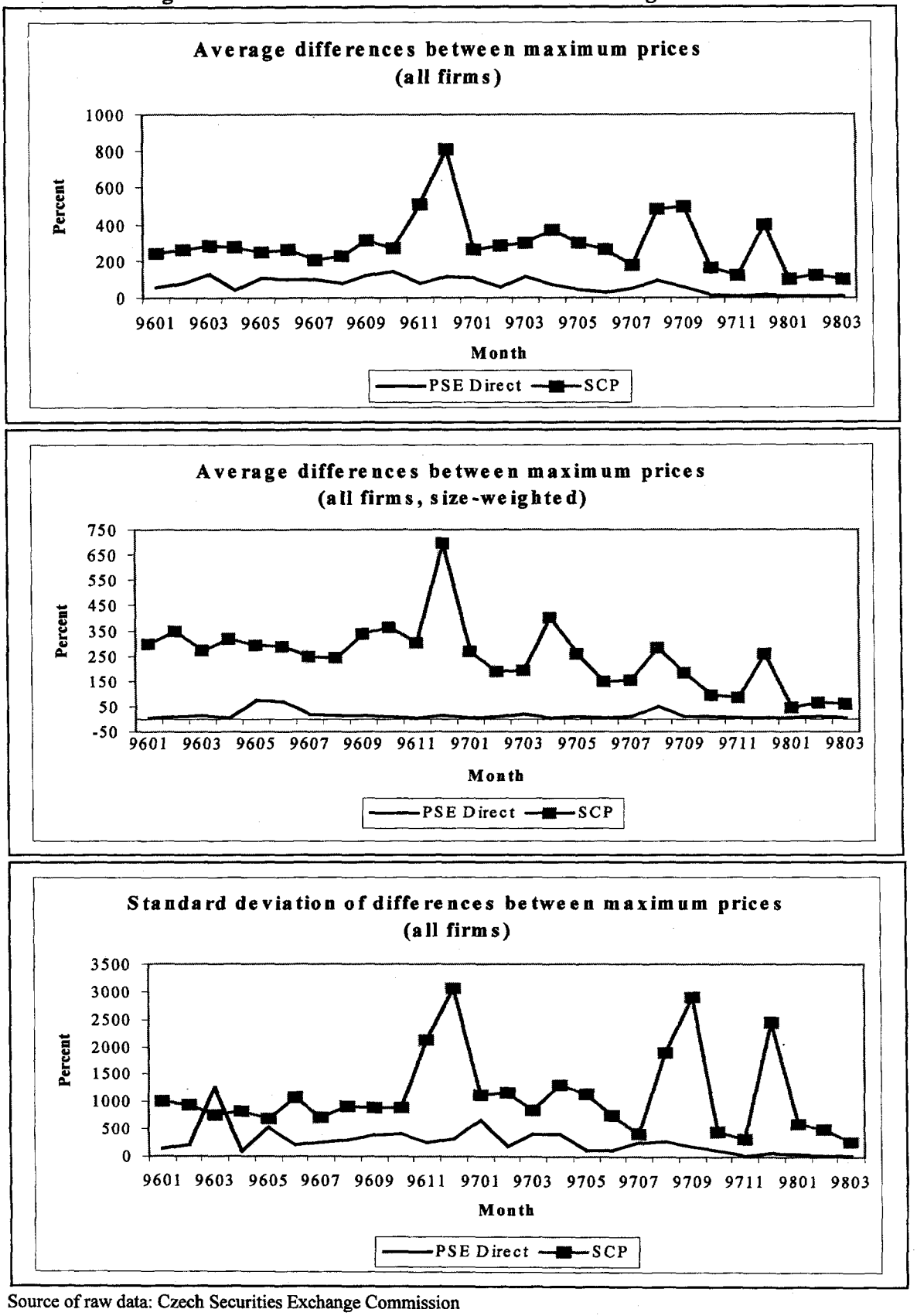
Source of raw data: Czech Securities Exchange Commission

Figure 2.4: Price Spreads in Different Market Segments



Source of raw data: Czech Securities Exchange Commission

Figure 2.5: Maximum Prices in Different Market Segments



Source of raw data: Czech Securities Exchange Commission

The existence of control premia is likely to be a more important reason underlying the observed price differences. The dynamics of Czech market activity through the post privatization phase has been predicated on the existence of large ultimate buyers of stock at higher prices. There are many ultimate investors who would be willing to pay a premium for control, and many intermediaries and opportunists who consolidated stock and rigged the official market. Although the analysis does not unequivocally confirm the downward manipulation of auction prices against direct trade prices, it may be noted that the average and maximum prices of shares in PSE auctions are lower than the average prices of shares in PSE direct trading, as shown in Figures 2.3, 2.5 and Table 2.7. This premium of PSE direct trade prices over auction prices could be an implicit indicator of the value of control.[16] [17]

Table 2.7: Average Prices of Shares on the Prague Stock Exchange

	1995	1996	1997
Listed Shares			
Auction	822	803	785
Direct Trade	1,049	1,034	1,151
All Shares			
Auction	548	467	508
Direct Trade	890	894	877

Sources: Stock Exchange Fact Books 1995-1997.

Finally, the price differences could also be explained by a variety of fraudulent transactions with securities, not necessarily related to the acquisition of control, but simply designed to strip the assets (or "tunnel" the assets in Czech parlance) of investment funds in favour of connected parties. There is a variety of operations, including the lending of securities and repurchase agreements that could be used for this purpose (see the MoF (1997) for an extensive description of fraudulent operations).

The fact that a large number of securities was traded at very different prices from the PSE auction price (defined as the "official" price according to a Government Decree) implies that the latter has limited indicative value, a problem acknowledged by the MoF (1997). It is, nonetheless, the price used in the valuation of enterprises and the asset portfolio of unit trusts and investment funds. This implies the existence of distortions in the valuation and credit assessment of enterprises and financial intermediaries, and possibly distortions in the allocation of capital.

The Bond Market

The bond market is considerably smaller than the equity market—as shown in Table 2.8, its total capitalization is around US$6 billion (the equivalent of 10 percent of GDP). The smaller size of the bond market reflects in good part the conservative fiscal policies of the Czech Government, and the use of the equity market in the voucher privatization program. The bond market has been an over-the-counter dealer (i.e. market maker) market dominated by 5 banks, but in 1997 it improved its links with the Stock Exchange through an agreement with the Association of Bond Traders, which undertook to supply bond quotations on a daily basis to the Exchange. Although little trade is actually conducted in

16 In other stock markets where voting and non-voting shares may co-exist for the same issuer, the premium of the price of voting shares over that of the non-voting is an explicit indicator of the value of control. The very fact that shares with superior voting rights trade at a large premium is evidence of significant private benefits of control that may come at the expense of minority shareholders (Schleifer and Vishny (1997)).

17 The difference between SCP prices and PSE auction prices may not be a good indicator of control premia, because SCP price series capture other transactions with securities, such as repurchase agreements.

the PSE (most trade is direct and settled through Univyc), this will make bond prices in the Stock Exchange more reliable, which is of importance to the valuation of investment funds, whose investment in bonds and short term money market instruments has been increasing in preparation for the opening (Chapter 3).

Table 2.8: The Bond Market Indicators, 1993-97

	1993	1994	1995	1996	1997
Number of Issues		27	48	80	92
Market Capitalization (CZK billion)		50	88	137	174
Market Turnover (CZK billion)			151	405	658
PSE	2	19	70	143	433
RMS and Other			81	262	225
Market Capitalization/GDP (%)		4.3	6.5	8.9	10.5
Turnover/Capitalization (%)			171	295	378

Source: Stock Exchange Fact Books 1993-1997.

The two most significant features of the bond market in 1997 were the very high activity ratio (turnover over capitalization) and the large participation of international investors. International interest was already strong in 1995 and 1996, given the confidence in the Czech economy and the development of interest rate and currency swaps. There was further speculative activity during the turbulent monetary conditions of 1997. In addition, the Government exempted foreigners (but not residents) from a 25 percent withholding tax on interest that triggered further arbitrage activity.

Regulatory Framework

The functioning of the Czech capital market is regulated directly and indirectly by a number of laws and decrees introduced gradually since 1991, and amended in several occasions in the last few years. The main body of legislation includes the Bonds Act (530/1990); the Commercial Code (513/1991); the Securities Act (591/1992); the Stock Exchange Act (214/1992); the Investment Fund Act (248/1992); the Act on Banks (21/1992); the Act on Supplementary Pension Insurance (xx/1994); the Insurance Companies Act (185/1991); the Securities Commission Act (x/1998); the Foreign Exchange Act (219/1995); and the Tax System Act (212/1992). This section reviews briefly the laws directly related to the securities market—the Stock Exchange Act, the Securities Act, and the Securities Commission Act—whereas the other chapters will examine in detail the laws regulating the operations of companies and financial institutions.

The Stock Exchange Act is a conventional piece of legislation which provides for the establishment of stock exchanges, constituted as private entities, but with their governance prescribed by law and supervised by a Stock Exchange Commissioner. The Securities Act is an unconventional piece of legislation, conceived during the preparation of the voucher scheme to provide the legal basis for contracts in securities, to permit the operations of market organizers other than stock exchanges, and to provide a regime for licensing intermediaries.

Although neither of the two laws is strong in regulatory topics, they have some ethical and regulatory content. Under the Securities Law, for example, dealers must obtain the best terms for their customers, and must subordinate their own interests to the interests of their customers. Market organizers must have rules that provide for market disclosure. Issuers must notify the regulators without delay about changes in their financial situation or other facts that may cause a substantial movement in the prices of securities that they have issued. The Stock Exchange Commissioner has powers to supervise brokers and to procure information related to transactions.

Regulatory oversight has been recently strengthened by the introduction of a Securities Commission outside the MoF in 1998. The Commission is still financially dependent from the State budget, does not have the authority to issue regulations (these have to be issued as Government Decrees), and its activities are not supplemented by self-regulating organisations. However, it has extensive enforcement powers, and since its start in April 1998, has used its powers with speed and vigour. It has also take the initiative in providing guidance to on the interpretation of the securities law, which has been of assistance to the courts.

There is certainly scope for further improvements in the laws directly related to the securities market and in other laws as well. However, most of the examples of malpractice described earlier were breaches of existing laws, suggesting that the major problem faced by the new Securities Commission is lack of enforcement. The failure of the Stock Exchange Board to operate a fair and transparent dealing system encompassing most if not all dealing activity should have attracted regulatory action. The practice of intermediaries of subordinating the customers' interests to their own, and in dealing at prices away from those in the official market are further examples of non-compliance with existing legislation. Similarly, the failure of issuers to make the legally required disclosures was a clear contravention of the Securities Act.

Overall Assessment and Recommendations

Overall Assessment

The traditional market indicators overestimate the size and liquidity of the Czech capital market. After correcting for problems of multiple counting and special factors related to the voucher privatization program of 1993/94, the tradable equity market is found to be only half of the total, to have been a negligible source of finance for industrial enterprises, and to remain illiquid for all but a handful of shares. The traditional price indicators suggest that securities are correctly valued and that the equity prices are to some extent integrated with international equity markets. However, these indicators do not capture the divergence of security prices across different marketplaces.

The finding that the market is moderately sized relative to GDP and that liquidity is still low should come as no surprise, as the market has been operating for only five years. A more fundamental problem is the absence of transparency in pricing (for all but the top few stocks dealt on SPAD) and inadequate corporate disclosure. It undermines confidence in securities as a medium of investment, distorts credit assessment and the valuation of savings intermediaries, and may also pervert the allocation of risk capital.

The unreliability in pricing in the last few years reflects the exploitation, by fund and enterprise managers, of flaws in the regulatory and supervisory framework, as well as the fragmented structure and organization of the securities market. There is preliminary evidence that price divergence is becoming less severe. This is a positive development, which could reflect the underlying efforts to improve the regulatory framework for companies and financial institutions, and to strengthen the supervision of market activities.

The challenge faced by the new Securities Commission is to continue improving the regulatory framework and, especially, to strengthen its enforcement capacity. Moreover, these improvements in regulation and enforcement should be accompanied by parallel improvements in the organization of the market, to ensure faster price convergence. Market regulators have to face the failure of the PSE and

the RMS to provide transparent trading systems (a consolidated price display, co-ordinated settlement and freedom in order-routing) and assure unified pricing and best execution for market participants, which has led to a substantial amount of trading off-market. The schism in settlement facilities inhibits arbitrage between markets, increases overhead costs and frustrates true delivery versus payment on share transactions. The market fragmentation is not only a problem in itself (by making arbitrage activity more difficult and costly), but also facilitates non-compliance of the regulatory framework by market participants.

Recommendations

The main objectives of new Securities Commission should be to ensure compliance with the regulatory framework (while also introducing further improvements in legislation), and integrate the different trading channels. These actions would restrict the number of publicly tradable companies (to those that really fit this profile), ensure the achievement of price convergence, increase market liquidity, restore confidence, and open more possibilities for the raising of funds through equity issues.

The reduction in the number of publicly tradable companies (from about 1,800 to less than 300, excluding the investment funds) would be naturally achieved if the controlling shareholder is induced to buy the shares of stranded minority shareholders and transform the company into a privately-held company. This could be achieved by strengthening the enforcement of the existing rules (particularly disclosure and trading rules) and by introducing further improvements in the regulatory framework, particularly in the area of minority shareholder protection (as discussed in Chapter 4). These two sets of actions would make it costly to remain public and encourage several firms to change their legal status. The reduction in the number of tradable shares would "clean the market", allowing the Commission to supervise fewer companies more effectively, and contribute to more transparency in trading.

The measures required to improve regulatory framework and the enforcement of the trading rules would include:

- Reviewing the jurisdiction of the Securities Commission in order to ensure that it is adequate; this particularly applies to its powers over the Stock Exchange. Consideration should be given to a regulatory regime for the directors of publicly tradable companies.

- Creating a body of regulations consistent with EU directives and incorporating the conduct of business rules for investor protection required by the Investment Services Directive (see Annex 3 for a more detailed analysis).

- Introducing a better compliance regime to ensure that the interests of investors are put ahead of those of intermediaries and fund managers. The conduct of business rules need to be implemented through formal procedures to which an audit trail is attached, so that they can be exposed to regulatory inspection.

- Developing procedures for criminal prosecution for those who dishonestly misappropriate corporate or fund assets. This would establish the forensic techniques for identifying misconduct and the methods of prosecuting in manners likely to obtain convictions from judges who are laymen.

- Applying sanctions available to the Commission (e.g., reprimands, fines, suspension of licence).

- Exploring the self-regulatory powers of the Stock Exchange, to allow for summary treatment of complaints against member firms and provision for restitution of profits arising from misconduct. The Commission should consider whether membership of the Exchange or of a body with comparable powers under its membership rules, should be a condition of being licensed.

- Enforcing comprehensive disclosure of financial statements and annual reports by all publicly traded joint stock companies, in accord with a strict interpretation of the disclosure requirements of the Securities Law, Accounting Law, Stock Exchange Law and other relevant pieces of legislation (Chapter 4 provides further discussion of disclosure requirements).[18]

- Providing guidance to publicly traded companies on notifiable events and appropriate classes of circular or information release to events of varying importance.

The measures that would contribute to eliminating market fragmentation would include:

- Establishing the universal clearing centre and facilitate the operations of custodians.

- Requiring that if a security is traded in two different organized markets there should be facilities for order routing which ensure that investors obtain best execution; where this is not technically possible "cross-listing" on more than one organized market should be prohibited.

- Enforcing timely and comprehensive price disclosure by companies trading in different segments of the market.

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18 It is sometimes argued that disclosure requirements should be used as a lever to encourage small publicly traded companies to go private. Far more important is the general obligation to disclose on all publicly traded companies and the standard of disclosure should be set by the need of the market to be properly informed at all times. Whether this requirement is onerous on small companies is of secondary importance.

CHAPTER III: INVESTMENT FUNDS

Introduction

Investment funds were first introduced in the capital market in 1992, during the first wave of the voucher privatization program. They were expected to fulfil a number of very important roles, including collecting vouchers from individuals, bidding for shares in the primary auctions, administering individual accounts, conducting secondary trading, and maximising the value of their portfolios, not only through a proper selection of shares, but also through active corporate governance.

Several years after the launching of the voucher privatization program, there is a general disappointment with the performance of investment funds. Not only corporate governance by the funds is considered to have been poor, but there is also widespread belief that several of them were used as instruments of asset stripping (or "tunnelling" in Czech parlance) by their managers. Several causes of such a poor performance have been identified, including liberal licensing criteria, lax supervision, limited disclosure rules, and the weak incentives related to the closed-end structure of most funds.

The disappointment with the performance of investment funds has led the Czech Government to radically change its strategy towards the sector. The new strategy is reflected in the new Investment Fund Act passed by Parliament in April 1998. The new law mandates the opening of all closed-end funds during a maximum period of three years, and also introduces greater portfolio diversification rules. The new framework will alter the structure of the sector and the way investment funds operate.

The new law represents a radical but basically sound solution to the problems affecting the sector. The opening will put pressure on under-performing funds and will provide an exit opportunity for a large number of individual investors. Therefore, it will help restore the credibility of capital market institutions, which has been severely damaged by a series of scandals in the last few years. The challenge faced by policy-makers now is to ensure an orderly implementation of the law, identify and correct remaining deficiencies in the regulatory framework, and pave the way for a smooth integration of the sector into the EU.

The objective of this chapter is to review developments in the recent years, assess the impact of recent changes, and identify the additional measures that must be adopted to ensure greater efficiency and a successful EU integration. The chapter is structured as follows. The second section provides background information on investment funds, related to their role in the voucher privatization program. The third section analyses the structure and performance of the sector. The fourth section discusses the new Investment Fund Act, with emphasis on the impact of the mandatory opening on the sector and the capital market. The fifth section makes an overall assessment of the sector and the recent changes, and the last section provides a number of policy recommendations.

The Emergence of Investment Funds

The Initial Structure of the Sector

As mentioned in Chapter 2, the voucher privatization scheme was the central component of the Czech mass privatization program, and involved the sales of enterprises for vouchers in two waves—the first concluded in 1992, and the second concluded in 1994. The vouchers were distributed at a symbolic cost to Czech citizens—each voucher book cost CZK1,000 (US$35)--and could be used either

to bid directly for enterprise shares in the auctions, or placed in newly-created investment funds, which would then use the vouchers to bid for enterprise shares.

The introduction of investment funds in the voucher program was a response to concerns that a simple distribution of vouchers to the public would lead to a very dispersed ownership structure and ineffective corporate governance. At the same time, there were also concerns about excessive portfolio concentration in a single fund and the large portfolio risks that such a concentration would entail. Eventually, policy makers decided to adopt a compromise between two models—the active fund model (similar to a venture capital fund, without portfolio restrictions and expected to exercise active governance), and the passive fund model (modelled on Western mutual funds, and based on the principle of risk diversification).

The compromise model involved funds with diversified portfolios, but with less severe restrictions on corporate ownership and control than in US and European fund legislation. Investment funds could not invest more than 10 percent of their assets in a single company and could not hold more than 20 percent of the equity of a company (that compares with a limit of around 5 percent in the US and the EU).

Investment funds formed in the first wave were all constituted as joint stock companies. Individuals placing their vouchers in these funds became shareholders with voting rights, and the funds were subject to the same governance rules that applied to ordinary joint stock companies. In practice, the funds were managed by separate management companies, which happened to be the funds' original founders (or sponsors). Each licensed management company was allowed to manage a family of funds, and some companies founded and managed more than 10 funds. All the funds created in the first wave were closed-end funds—investors wanting to exit had to sell their shares in the secondary market.

In the second wave, funds could be constituted not only as joint stock companies, but also as unit trusts—individuals placing their shares in these funds became unitholders without voting rights. The funds constituted as unit trusts had to be managed by separate management companies, which could again sponsor and manage a family of funds. These funds could be either closed-end or open-end. However, the open-end funds were given a grace period of three years before having to honor their obligation to redeem their shares at net asset value. Individuals choosing closed-end funds could only sell their shares in the secondary market.

As shown in Table 3.1, the value of the shares of enterprises privatized in the two voucher waves amounted to around 30 percent of GDP, two-thirds of which were carried out in the first wave and one-third in the second wave. However, the Government's holdings amounted to 40 percent of the total, or 12 percent of GDP, due primarily to its large holdings in utilities and banks. Investment funds captured approximately 70 percent of private sector holdings, or the equivalent of another 12 percent of GDP. The success of the investment funds in attracting vouchers was due to the promise by several funds to redeem their own shares at 10 times the value of the voucher books, or the equivalent of CZK10,000 (US$350) per each voucher book. The funds were confident that this promise could be honored, after estimating that each voucher book would buy around CZK30,000 in shares.

Out of the total vouchers placed in investment funds in the two waves, the corporate funds (IPFs) captured all the vouchers in the first wave and 40 percent of the vouchers in the second wave (Table 3.2). Thus, IPFs had a market share of 80 percent after the two waves. Closed and open-end- mutual funds had market shares of 12 and 8 percent, respectively. These funds actually captured together more vouchers than the corporate funds in the second wave, but the value of enterprises privatized in

the second wave was lower than in the first wave. The two types of closed-end funds dominated the market, with a combined share of 90 percent.

The investment fund sector emerged with a concentrated structure. As shown in Table 3.3, the largest fund (Ceska Sporitelna) captured 15 percent of all vouchers in the first wave, and the 10 largest fund families (groups of funds sponsored by the same management company) captured two-thirds of all vouchers. The distribution of vouchers in the second wave was somewhat less concentrated, but the 10 largest fund families still captured 50 percent of the vouchers. Funds sponsored by banks attracted 35 percent of the vouchers in the first wave and 25 percent in the second.

Table 3.1: Investment Fund Holdings After the Two Waves

	Value of Shares (% of GDP)	Government Holdings (% of GDP)	Private Holdings (% of GDP)	Investment Fund Holdings	
				(% of Private)	(% of GDP)
First Wave	20.0	n.a.	n.a.	71	n.a.
Second Wave	10.0	n.a.	n.a.	63	n.a.
Total	30.0	12.0	18.0	68	12.2

Source: Kotrba, Kocenda, and Hanousek (1998).

Table 3.2: Types of Investment Funds and Shares of Voucher Points

	Investment Privatization Funds	Closed Mutual Funds	Open Mutual Funds	Total
	Number (% of vouchers)	Number (% of vouchers)	Number (% of vouchers)	Number (% of vouchers)
First Wave	264 (100%)			264 (100%)
Second Wave	195 (40%)	120 (38%)	38 (22%)	353 (100%)
Total	459 (80%)	120 (12%)	38 (8%)	617 (100%)

Source: Kotrba, Kocenda, and Hanousek (1998).

Table 3.3: Concentration Ratios by Sponsor (% of fund family in total)

	Largest Fund	Largest 5 Funds	Largest 10 Funds	Bank-Sponsored
First Wave	15	52	67	35
Second Wave	8	33	51	24

Source: Kotrba, Kocenda and Hanousek (1998).

The Initial Regulatory Framework

The initial regulatory framework for the investment fund sector was established by the *Investment Companies and Investment Fund Act,* enacted in April 1992. Regulation and enforcement were liberal, reflecting the intention to facilitate secondary trading and the consolidation of ownership. Licensing criteria included minimum capital of CZK1 million (US$33,000) for IPFs, submission of articles of association, prospectuses, and "fit and proper" tests. Although the licensing criteria looked reasonable, it is doubtful that they were strictly adopted, given the proliferation of management companies (almost 200 companies, managing about 600 funds). Whereas the management companies associated with banks could claim that their application was backed by the reputation and the track record of these banks, several other applicants would not pass a strictly enforced "fit and proper" test.

The Act established that funds could not invest more than 10 percent of their assets in a single company, and could not hold more than 20 percent of the equity of a single company. However, these and other restrictions were circumvented in practice, given the indirect ownership connections and the

lax enforcement (Kotrba, Kocenda and Hanousek (1998)).[19] Management companies could not charge fees higher than 2 percent of net asset value (NAV) of each fund, or 20 percent of accounting profits, whichever was higher. The 2 percent over NAV limit did not depend on profits and performance and was effectively the limit used by most funds. That was a high limit by international comparison—mutual funds in the US charge 0.5-1.5 percent of NAV, depending on their turnover and the nature of the fund.

The Act did not provide adequate protection of shareholders of IPFs and unitholders of unit trusts, due to the limited disclosure rules, limited liability of managers, limited shareholder rights (a problem affecting shareholders of all joint stock companies, as explained in Chapter 4), absence of clear custodian responsibilities, and the lax supervision (at that time, carried out by an under-equipped department in the MoF).

Early studies of the Czech program (e.g. Coffee (1995)) had pointed out that the incentives of management companies were not conducive to good corporate governance. The management companies had control over a large volume of assets, but did not share the gains of equity appreciation—the fee of 2 percent on NAV provided a small incentive, relative to the potential gains related to insider deals and fraudulent transactions. Also, under-performing management companies were not easily challenged, due to the closed-end nature of most funds, the length of the management contracts, and their control over the boards in practice (their control over unit trusts was even stronger, since there were no boards in this case).

Under-performing management companies were only concerned by the threat of hostile take-overs, and that applied only to corporate funds (which offered voting rights). During the 1994-96 period there were indeed many corporate raiders attempting to gain control of several IPFs. However, to pre-empt hostile take-overs, many fund sponsors started to gain ownership over the funds that they managed, by buying shares from individuals wanting to sell. The sell-out pressure was particularly strong for the funds that had promised to redeem the shares at 10 times the value of the voucher books.

The concern that poor fund governance was primarily due to the separation of ownership and control seemed for a moment to be unfounded, at least in the case of the corporate funds, since the buy-out implied that the management company would start sharing the appreciation of the equity portfolio to a greater extent. However, the buy-out does not seem to have improved dramatically the incentives for active governance, and the lack of transparency and minority shareholder protection still implied a large room for abuse by large shareholders. The recognition of these deficiencies, combined with the public's dissatisfaction with the take-over battles, led to strong pressures to improve regulation.

The authorities responded to these pressures by introducing several amendments to the Investment Fund Act in July 1996 (combined with amendments to the Commercial Code). The 1996 amendments strengthened the powers of the supervision, improved disclosure rules, and strengthened the role of the depository. The amendments also imposed more stringent conditions for the conversion of investment funds into holding companies, a device that was already being used by several funds to escape regulatory control. These conditions included the obligation of a minimum two-thirds majority vote for a conversion, and the obligation to redeem the shares of dissenting shareholders at NAV.

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[19] The 20 percent ceiling was imposed at the level of the fund family for funds in the corporate form (IPFs). Management companies managing IPFs and unit trusts could increase legally their joint holdings in a single company to 40 percent.

The Conversion of Funds into Holding Companies

In order to avoid a stricter regulatory framework, including the more stringent conditions for conversion, 77 funds decided to convert into holding companies in the first half of 1996 (Table 3.4), before the amendments to the Investment Fund Act took effect (which effectively happened in July 1996). The funds converted into holding companies were all corporate funds, as unit trusts could not convert. The new holding companies were still joint stock companies under the Commercial Code, but escaped all the provisions of the Investment Fund Act. They did not need to disclose their NAV, or the composition of their portfolio, and were not subject to any clear regulation of prices at which they could buy or sell securities.

Very few holding companies maintained a policy of voluntary disclosure after the conversion, and in most cases the conversion was perceived as a prelude to further tunnelling and fraud. The shares of these companies practically stopped being traded, and their prices collapsed (see below). Most of the funds which underwent conversion were not associated with banks, as the banking group could not afford damaging its reputation. The assets of the converted funds were quite substantial, amounting to more than 25 percent of total investment fund assets, or the equivalent of 3 percent of GDP.[20] Therefore, the conversion resulted in a significant volume of assets being managed without regulatory oversight, and a great number of small shareholders without good exit opportunities.

Table 3.4: Number of Investment Funds Converted into Holding Companies, 1994-98

1994	1995	1996 (1st half)	1996 (2nd half)	1997	1998 (1st quarter)	Total
1	10	77	9	29	5	131

Source: Czech Securities Exchange Commission.

Structure and Performance of the Sector

Changes in Structure Since the Second Wave

The structure of the investment fund sector has changed significantly since the completion of the second wave in 1994. As shown in Table 3.5, the most dramatic change has been the reduction in the number of funds, due primarily to the sharp decline in the number of IPFs. The number of closed-end trusts has also declined, although by a much smaller amount, whereas the number of open-end trusts has increased significantly. Open funds accounted for almost half of total funds in early 1998, up from only 6 percent of the total in 1994.

The decline in the number of IPFs has been due to conversions into holding companies, voluntary mergers, and forced interventions by the supervisory authority, which is usually followed by liquidations and mergers. The decline in the number of closed-end trusts has been due primarily to the voluntary opening of several of these funds—unlike IPFs (which could not open until recently), closed-end trusts always had the option to open. Some management companies decided to open their closed funds in anticipation of the new Investment Fund Act, and to get a larger market share. Finally, the increase in the number of open-end trusts has been due not only to the opening of several closed-end trusts, but also to the creation of new open funds independently from the voucher privatization program.

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20 Converted first wave funds accounted for 28 percent of total first wave points, and converted second wave funds accounted for 21 percent of total second wave points (Kotrba, Kocenda and Hanousek (1998)). These estimates do not include the conversions in 1997 and 1998.

The total assets of investment funds amounted to approximately 12 percent of GDP in 1995, but declined to around 8 percent of GDP in 1996 (Table 3.6). The decline is probably due to the conversion of several funds into holding companies, which held assets amounting to approximately 3 percent of GDP. However, the changes in total assets may also be due to price fluctuations and to inaccuracies in measurement (there is no consistent data on the whole universe of funds, total assets are estimated from a sample of the largest funds, and the valuation of several assets may not be accurate).[21]

The share of IPFs in total assets has declined considerably, although not in proportion to the decline in their numbers. The open funds have increased their market share, but again, not in proportion to the increase in their numbers. This suggests that there is a great number of new open funds being formed, which are faced with difficulties to attract savings and grow. These difficulties are probably due to the lack of credibility and confidence of the public on all kinds of funds, after several scandals involving fund managers, and will only be removed gradually, with further improvements in regulation and enforcement. Finally, the industry seems to have become more concentrated (Table 3.7), but this seems to be entirely due to higher concentration among the IPFs, which could be due to the conversion of several funds into holdings. Within closed and open trusts, the levels of concentration are high, but have been stable or even declining in the recent years.

Table 3.5: Number of Management Companies and Investment Funds, 1994-98

	Management Companies	Investment Privatization Funds	Closed Unit Trusts	Open Unit Trusts	Total Funds
End of 2nd Wave	n.a.	459	120	38	617
March 1996	161	254	166	120	540
March 1997	145	148	161	123	432
March 1998	112	105	86	145	336

Source: Czech Securities Exchange Commission.

Table 3.6: Total Assets of Investment Funds (% of GDP) and Shares in Total, 1993-96

	1993	1995	1996
Total Assets (% of GDP)	9.7	12.0	8.2
Shares in Total (in %)			
IPFs	91.7	72.5	69.4
Closed Unit Trusts	3.6	14.4	15.8
Open Unit Trusts	4.8	13.1	14.8

Source: Czech Securities Exchange Commission.

Table 3.7: Concentration Ratios by Type of Fund, 1995 and 1996 (% of total assets)

	IPFs		Closed-end Trusts		Open-end Trusts		Total	
	1995	1996	1995	1996	1995	1996	1995	1996
Largest 5	38.2	58.2	36.8	37.8	51.3	50.7	39.8	53.9
Largest 10	54.8	75.0	56.4	56.9	72.3	69.8	57.5	71.4

Source: Czech Securities Exchange Commission.

21 The sample constructed by the Securities Commission comprises more than 200 funds, and probably captures around 95 percent of total assets, but has not been consistent over the years, leading to some measurement inaccuracies. However, the order of magnitude is probably correct, as independent data from the association of investment funds also indicates total assets of around Kc130 billion in 1997, the equivalent of 8 percent of GDP.

Performance of Investment Funds

Analyzing the performance of investment funds would require assessing their efforts to exert corporate governance on the enterprises, and examining their financial accounts. If the funds had acted on the interests of their shareholders, and had the skills and resources to exert their governance task, these actions would be reflected in an improving financial performance of enterprises in their portfolios and, ultimately, in an improving financial performance of the funds themselves (reflected in decreasing costs, and increasing profits, dividends, NAVs, and the prices of their shares). Although it seems that most funds made an effort to appoint representatives to the boards and to exert active governance (Kotrba, Kocenda, and Hanousek (1998)), there is general disappointment with the performance of these institutions. This disappointment has been partly generated by cases of fraud reported by the financial press, and is clearly reflected in the high discounts on their NAVs (see below). However, these perceptions appear to be justified, given the mixed record of enterprise restructuring in the Czech Republic, and the results of empirical research concluding that ownership by investment funds was not conducive to an improvement in enterprise performance (Chapter 4).

Assessing the funds' overall performance from an examination of their financial accounts is constrained by the limited amount of data. For instance, it has been reported that investment funds have charged fees around 1.5 percent of NAV (Coffee (1995))--a high figure in comparison with mutual funds in the US—but there is no reliable data on costs to corroborate these allegations. However, there is some information on portfolio composition and on prices that may provide some insights into the strategies and performance of these institutions.

As shown in Table 3.8, investment funds have pursued a policy of greater portfolio diversification, out of shares and into bonds, CDs and other assets. The sales of equity by investment funds was matched by larger holdings of equity by strategic investors and, to a lesser extent, by other institutional investors, such as banks, pension funds and insurance companies (Chapters 4, 5 and 6). Not surprisingly, the open-ended unit trusts were the group with the most liquid portfolio in 1997, followed by the closed-end unit trusts and the IPFs. Given the pressures for redemption and the new strategy of mandatory opening, the general increase in fund liquidity must be regarded as a positive development. However, the data on portfolio composition does not provide additional information on fund behaviour and performance. This unloading of equity may have been conducted at manipulated prices at the expense of minority shareholders, and the funds may have also exercised poor governance in the enterprises which remained in their portfolios.

The behavior of fund share prices may reveal more information on the performance of investment funds. To the extent that market prices reflect all information available to market participants, they should provide some indication as to how the market has valued the performance of fund managers, not only in monitoring the enterprises in their portfolio, but also in reverting the gains to the benefit of their shareholders.

As shown in Table 3.9, the discounts on the NAV[22] of closed-end funds have been generally very high, both for corporate funds and unit trusts, indicating that these funds have been poorly evaluated by the market. Although discounts on closed-end funds have been observed in other countries as well, they have not reached nearly the same orders of magnitude—in the US, for example, discounts have

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22 Defined as (P/NAV) - 1, where P is the price of the fund's share or unit in the secondary market, and NAV is the net asset value (per share or unit).

averaged 10 percent, and have peaked at levels around 25 percent (Lee, Shleifer, and Thaler (1990)). The average unweighted discount of all funds is significantly higher than the average of a smaller sample of larger funds, indicating that the problem of high discounts is more severe in the case of the smaller funds. Discounts declined in the second half of 1997, following announcements that the Government would implement a new law mandating the opening of all closed-end funds.

Table 3.8: Average Portfolio Composition (% of Total)

	1993	1994	1995	1996	1997
Investment Privatization Funds					
Shares	89.1	82.5	71.1	69.4	66.8
Bonds	0.3	1.2	3.8	5.9	16.3
* State	0.2	0.5	1.8	2.0	5.8
CDs	0.8	0.8	4.5	8.6	10.8
Cash and Other Claims	7.9	13.8	18.8	14.0	3.4
Foreign Assets	0.0	0.1	0.2	0.8	1.4
Open-End Unit Trusts					
Shares	51.3	55.6	58.1	35.5	34.3
Bonds	10.2	17.6	14.8	35.0	23.3
* State	8.1	6.3	3.6	21.1	6.0
CDs	22.9	8.3	8.6	8.5	29.9
Cash and Other Claims	15.6	18.5	18.5	18.7	11.4
Foreign Assets	0.0	0.0	0.0	2.2	1.1
Closed-End Unit Trusts					
Shares	51.1	53.0	61.2	52.2	43.7
Bonds	8.8	11.8	5.8	10.3	15.6
* State	6.9	0.6	1.9	3.6	8.5
CDs	16.1	5.7	8.3	14.7	10.0
Cash and Other Claims	24.0	29.5	24.6	22.6	27.7
Foreign Assets	0.0	0.1	0.0	0.1	2.9

Source: Czech Securities Exchange Commission.

Table 3.9: Average Discounts of Closed-end Funds (% over NAV)

	IPFs			Closed-end Trusts		
	Unweighted (all funds)	Unweighted (larger funds)	Weighted (larger funds)	Unweighted (all funds)	Unweighted (larger funds)	Weighted (larger funds)
Dec. 1994	82	-	-	55	-	-
Dec. 1995	73	-	-	69	-	-
Dec. 1996	79	63	46	81	-	-
Dec. 1997	67	53	33	78	-	-

Source: Czech Securities Exchange Commission.

More information on discounts is provided in Figure 3.1, which shows average weekly discounts for a sample of 30 investment funds over the January 1994-March 1998 period.[23] The sample was divided into four groups: (i) funds converted into holding companies; (ii) funds independent from banks, but considered as low risk; (iii) funds sponsored by banks; and (iv) one fund subject to a hostile take-over in 1997.

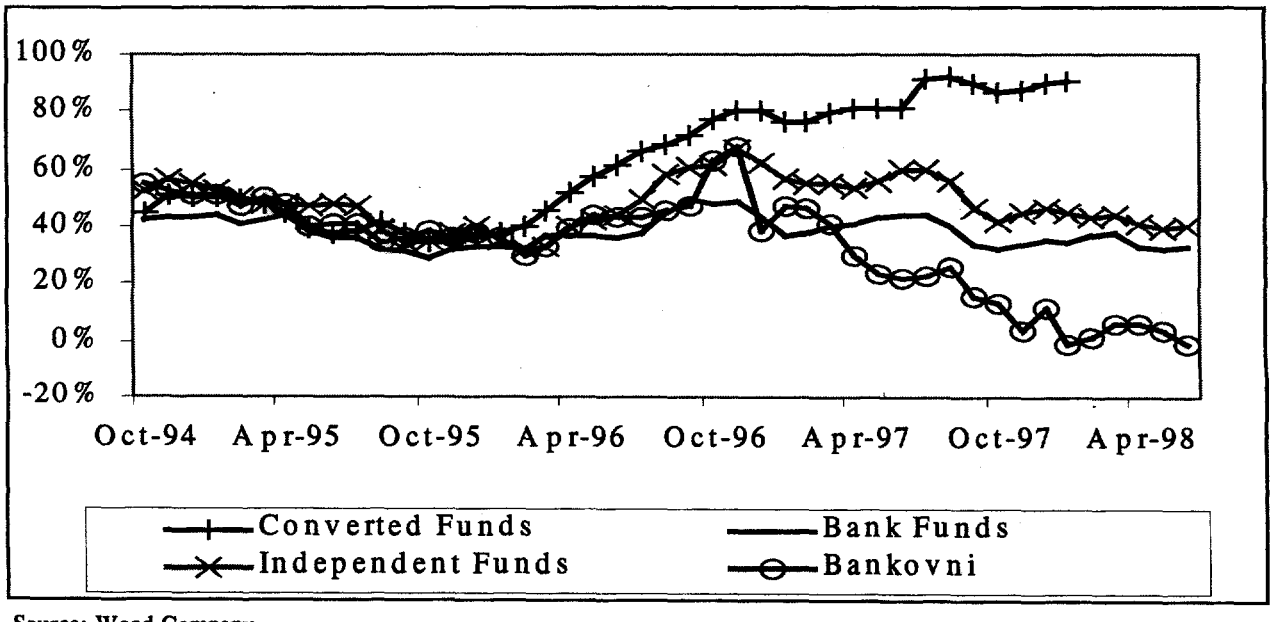
[23] The data was kindly provided by the Wood Company.

All the funds experienced a decline in their discounts during the 1994-95 period, as shown in Figure 3.1. As mentioned before, this period was characterized by several battles for corporate control, with many corporate raiders attempting to take over investment funds, and incumbent management companies buying the shares of their own funds to retain control. The takeover activity pressed fund prices upwards, leading discounts to fall from around 50 percent in early 1994 to around 30 percent in late 1995.

Wider differences between the four groups started to emerge in 1996. The discounts of funds converting into holding companies started to increase almost continuously, reflecting the lack of disclosure, and the perception that conversion was a prelude to more tunnelling and fraud. The lack of interest in buying shares of funds controlled by insiders without minority shareholder protection led to a continuous increase in discounts to levels above 90 percent in 1997. The other funds also experienced an increase in discounts in 1996, probably due to the uncertainty prevailing during this period, and the risk that these funds would also convert into holding companies. However, as the strategy of no conversion of these funds became clear, discounts started declining.

Although fund discounts have tended to decline, the discounts of independent funds have remained generally higher than those of bank-sponsored funds. The market probably assigns lower solvency and liquidity risks for bank-sponsored funds, given their better management and liquidity situation, and the banks' commitment to their funds. Discounts declined significantly in the second half of 1997, following the announcement of mandatory opening of all funds (a decline in the discounts of opening closed-end funds has also been observed in the US (see Lee, Shleifer and Thaler (1990)). Discounts of bank funds have declined to 35 percent, reflecting the exploitation of arbitrage opportunities.[24] Finally, the case of Bankovni fund illustrates how discounts can be turned into a premium due to takeover attempts.

Figure 3.1: Discounts of the Shares of Investment Funds (in %), 1994-98



Source: Wood Company

[24] The new law allows funds to charge a redemption fee of 20 percent in 1998 and 10 percent in 1999. An arbitrageur borrowing at 15 percent would buy fund shares until the discount fell to around 30 percent.

The New Strategy Toward Investment Funds

The Major Changes Introduced by the New Investment Fund Act

The persistence of large discounts during 1996 and 1997, and the general disappointment with the performance of investment funds, led the Czech Government to consider a radical change in its strategy towards the sector. The new strategy is reflected in new amendments to the Investment Fund Act, approved by Parliament and made effective in July 1998.

The major change in the new law is the introduction of the mandatory opening of all existing funds—the law forces all closed-end funds to convert into open funds at the latest by the end of 2002. The mandatory opening starts at the end of 1998, with the funds whose average discounts are above 40 percent of NAV for a period of six months, then after six months with those whose average discounts are above 30 percent, then those with a discount above 20 percent and so on. The law allows funds to charge a redemption fee of 20 percent in the first year of implementation, but to reduce it to 10 percent in the second year. The law applies to all existing funds, but allows new closed-end funds formed as unit trusts to be established, if their life span is limited to ten years. The new closed-end funds would have to follow the same regulatory framework that applies to open funds.

Another important change is the reduction in maximum holding of shares of a single company—from the present 20 percent of the company's equity to 11 percent. This lower ceiling implies greater portfolio diversification and was introduced to ensure consistency of prudential regulations with the opening of all the funds. Other rules designed to reduce portfolio risk include the prohibition to invest in silent partnerships. Finally, a related important development has been the creation of an independent Securities Commission outside the MoF, tasked with the supervision of all collective funds.

Assessing the Impact of the Changes on the Capital Market

The compulsory opening of all existing closed-end funds, combined with greater diversification rules, are probably the best solution to the problems affecting the sector today. The opening will provide strong incentives for better fund governance (as only the best institutions will attract a larger volume of savings), will remove the most inefficient institutions, and help restore the population's confidence in the capital market. However, the opening also raises at least three important questions. The first is whether there will be massive redemptions and a dramatic fall in stock prices. The second is whether massive redemptions will lead to generalized fund illiquidity. The third is whether there will be a loss in the quality of corporate governance.

The answer to the first two questions depend on how many funds will be critically affected by the mandatory opening. Although the opening will affect all funds, there has been a general movement out of equity and into more liquid assets (Table 3.8). In fact, many funds are liquid already, and have announced that they will open well ahead of the timetable prescribed by the law. However, the situation varies substantially from one fund to another, and there are several funds with large discounts which may find themselves coping with substantial redemptions in the early stages of the implementation of the law.

As shown in Table 3.10, the IPFs with discounts above 40 percent (the first to be forced to open) accounted for 25 percent of total IPF assets in 1997 (down from 46 percent in 1996). Assuming that closed-end units trusts have the same discount distribution, the closed-end funds initially affected by the law account for 20 percent of all investment fund assets (25 percent times the share of all closed-end

funds, which is 80 percent), or approximately 1.6 percent of GDP. The average share of equity in the total portfolio of these funds is 60 percent, implying that their equity holdings amount to less than 1 percent of GDP. Out of this total, there are probably stocks with very different levels of liquidity.

Table 3.10: Levels of Discounts and Share in Total Assets for a Sample of Investment Funds

	1996			1997		
Discounts (%)	Number of funds	Share in Total Assets (%)	Cumulative Share (%)	Number of funds	Share in Total Assets (%)	Cumulative Share (%)
80-100	18	7.7	7.7	1	0.0	0.0
60-80	27	15.7	23.4	14	5.2	5.2
40-60	19	22.7	46.1	7	19.4	24.6
20-40	7	40.2	86.3	6	75.3	99.9
0-20	5	13.7	100.0	1	0.1	100.0
Total sample	76	100.0		29	100.0	

Source: Czech Securities Commission.

Overall, the implementation of the mandatory opening seems to be feasible, since the funds which will be mostly affected account for only 20 percent of total assets, have some liquid assets in their portfolios (possibly some liquid stocks as well), and are unlikely to face a redemption rate of 100 percent (due to inertia and the possibility to charge a 20 percent redemption fee initially). The funds with lower discounts will have to open as well, but are in better shape and have more time to deal with their illiquid assets.

The redemptions (and the reduction of maximum equity holdings from 20 to 11 percent) will force the funds to sell some of their shares, but may not result in a substantive fall in share prices, because many of these assets are likely to be bought by strategic investors and other funds and financial institutions (funds have some scope to reshuffle their portfolios and people redeeming their shares are likely to place their savings elsewhere in the financial system). However, the mandatory opening may result in some situations of fund illiquidity, which will have to be carefully managed by the Securities Commission. As discussed in section 5, the solution may require interventions, temporary suspensions of redemptions, mergers, and probably some liquidations as well.

The final question is whether the opening and greater portfolio diversification will result in a worsening in the quality of corporate governance. The fact that funds will have to reduce their maximum holdings of individual equities may indeed result in less incentives to exert active governance. However, the possible loss in governance from this effect is likely to be modest, as few funds seemed to be performing well in this area, and there is evidence that enterprises controlled primarily by funds restructured less on average than enterprises controlled by strategic investors (Chapter 4). Also, the net sales of shares by funds are likely to open room for greater participation by strategic investors, with a potential gain in corporate governance. Furthermore, the reduction in maximum equity holdings still leaves open the possibility for board representation and concerted action by the funds. The funds which were effectively monitoring enterprises will probably remain active in this area. Finally, the opening may improve governance at the level of the funds themselves, as under-performers will face for the first time the threat of net redemptions and a decline in profits.

The Adequacy of the Regulatory Framework for Open Funds

Within a period of 2-3 years the investment fund sector will be dominated by open funds, raising the question of whether the present regulatory framework is adequate for this type of fund. The new Investment Fund Act and the accompanying Government Decrees are largely adequate for open funds, and are generally in harmony with EU legislation. However, there are still some deficiencies that have to be corrected, mainly in the area of pricing and asset valuation, investment regulations, and the role of the depository.

Open-end funds are based on the principle that investors entering a fund should be on an equal footing with investors remaining and leaving it. That requires market to market computation of NAV involving good information on security and currency quotations. Although the Decree on the determination of the NAV is generally in line with international practice, it still contains a few flaws. For instance, if a company goes bankrupt or if quotations of some securities are suspended, it might be quite unrealistic to keep on valuing the securities at their last traded prices. A more important matter is that the historic pricing method is still used, while in most EU countries, forward pricing is now generally applied.[25] Under the forward pricing method, investors do not know beforehand at what price they can purchase or redeem fund shares, which may cause some discomfort, but it is essential to avoid losses for the fund when markets become volatile. If some clever investors know that the fund shares will go up or down substantially the next day, it is easy for them to rip some money off the fund.

Another anomaly in pricing is that many open funds are also listed on the stock exchange or the RMS. This may lead to an unhealthy situation where many investors do not get the best execution for their orders, making it impossible to know beforehand which will be the best price: the one on primary market (share issues and redemptions based on NAV) or the one on the secondary market. By comparison, in Luxembourg, several open funds are listed on the stock exchange, but there is no trading because the price listed is merely equal to the NAV. In the Netherlands, open fund shares are often purchased and sold only on the stock exchange, with the fund acting as a market maker trading at NAV plus or minus a margin. Thus, in both of these countries there is actually a single pricing system.

Another shortcoming of the Czech fund law is the long initial subscription period, which can last up to six months. Whereas this may have been useful during voucher privatization, such a long initial period doesn't seem justified for open funds, whose share price should be based on NAV from the moment the fund manager has begun to invest the cash.

The portfolio diversification rules are generally adequate, but still allows open funds to invest up to 10 percent of their net assets in securities issued by a single entity. In most other countries the limit is 5 percent, although applied with some leeway (in the US, 20 percent of the net assets of a mutual fund need not be diversified; in the EU, 40 percent of the net assets may consist of single entity investments representing between 5 and 10 percent of net assets).

Another field in which the regulatory framework does not match international standards concerns the depository, which should in fact be a custodian. The difference is that the Czech depository checks *ex post* if transactions are in order, while a custodian checks the transaction *ex ante,* and clears it only if

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25 Forward pricing has become commonly adopted, although it is not an explicit requirement of EU legislation. The UCITS directive is rather vague in respect to NAV--article 38 merely requires that the rules for the valuation of assets must be laid down in the law or in the fund statutes.

it is in order, which improves investor protection. The law partly corrects this flaw by imposing the designation of a single broker to handle all the fund's transactions. However, this creates a monopolistic relation which may be detrimental to the fund. It is certainly not a common international practice, and may require a revision when the Securities Commission finishes re-licensing all brokers and cleaning the brokerage industry.

Finally, the present taxation rules are not conducive to the future growth of open funds. These funds are subject to taxation of their interest income and realized capital gains at the rate of 25 percent. Although the tax rate is lower than the general corporate income tax rate (35 percent), it still places them in a disadvantageous position relative to direct holdings of securities and relative to investment in foreign funds in the EU and elsewhere.

The Problem Created by Holding Companies

The fact that investment funds have become holding companies by itself is not unique, as there have been several cases of conversion in Western countries.[26] The discounts on the shares of closed funds or holding companies are not unusual either. What is unusual is the combination of a massive conversion of funds controlling a significant amount of assets, the very deep discounts, and the large number of stranded shareholders who feel deceived by these developments. These shareholders trusted their vouchers to these funds, witnessed a conversion carried out by insiders, did not experience any benefits from the conversion, and do not have good exit possibilities.

The challenge faced by regulators is to ensure that the operations of the holding companies are conducted in a transparent way, and that minority shareholders are protected and have access to good exit opportunities. This challenge will require improving minority shareholder protection rules in general (Chapter 4) and introducing some rules specific to holding companies (section 6).

Overall Assessment

Investment funds were created during the period of voucher privatization, and were designed to be a compromise solution between a venture capital fund and a mutual fund, combining active corporate governance with portfolio diversification and investor protection. From both angles, they have failed their mission.

The initial comparison with venture capital funds was wrong, because investment funds did not provide capital to new ventures, but primarily exchanged vouchers against existing shares. A venture capital fund must prove that it has satisfactory corporate governance and exit arrangements, before it starts raising funds and investing, while an investment fund had to invest first and try and make such arrangements later. Venture capital funds are normally offered to institutional investors and to wealthy and knowledgeable private investors who keep a close tab on the fund managers, while investment funds were offered to a multitude of individual investors without any power. Finally, venture capital funds are normally allowed to acquire much more than 20 percent of a company's equity, in order for them to be able to exercise corporate governance properly.

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[26] These include cases such as the Société d'Investissement du Nord, absorbed by the Compagnie du Nord (of the Rothchild group); Cofirep and Finarep, absorbed by Elf-Aquitaine; Western Rand Investment Trust and Orange Free State Investment Trust, merged to become Amgold,, a holding company of the Anglo-American group, and Eurofund, absorbed by ITT.

The new Investment Fund Act mandates the opening of all funds within a period of three years. This is a radical but basically sound decision, justified by the poor performance of these funds and the need to rebuild confidence in capital market institutions. The opening of the funds seems feasible, as the degree of fund liquidity has generally increased, and some closed-end funds have announced that they will open voluntarily ahead of the timetable. The opening may lead to some downward pressure in share prices and situations of illiquidity. However, the fall in share prices will be moderate, if any, and problems of illiquidity are likely to be concentrated on the smaller funds. In any case, the Securities Commission should guide the opening process, to ensure an orderly exit of the weakest institutions.

The opening and the greater diversification rules are not likely to cause a significant worsening of corporate governance, as the performance of funds in exerting corporate governance has been generally poor. Net sales of shares by the funds may actually open room for greater participation of strategic investors, with a potential gain in governance. The opening may also improve governance at the level of the funds themselves, because under-performers will suffer net redemptions and a decline in fees and profits.

The present regulatory framework is basically adequate to guide the operations of open funds, but some deficiencies still remain, primarily in the area of pricing, taxation, and custodian services. These deficiencies should be corrected to ensure a sound growth of the funds and full compliance with EU legislation.

There is a role for genuine venture capital funds exerting active governance in any capital market. However, it is not clear whether this type of fund exists in the Czech Republic, and whether the regulatory framework will allow these funds to emerge. There were some hopes that funds converted into holding companies would play this role, but these hopes seem to be fading away. The holding companies are generally perceived as conduits for asset stripping, their share prices are very heavily discounted, and they still have a large number of dissatisfied small shareholders without good exit opportunities. The law allows new closed-end funds to be formed, but subjects them to the same regulation of open funds. Unless the regulatory framework is adapted, the new closed-end funds will not play the role of venture capital funds either, and may draw little interest from investors.

Policy Recommendations

Managing the Opening of Investment Funds

The Securities Commission should monitor closely the opening of closed-end funds, to ensure an orderly opening process and a fair treatment of investors, and also to make sure that the funds comply with all regulations after their opening. The procedures that would facilitate an orderly opening include issuing guidelines for the opening process, managing temporary situations of illiquidity, and issuing standardized texts for the new open funds.

Standardizing the Administrative Procedures. The Commission should issue guidelines clarifying the different stages of the opening process, which would include: (i) the trigger (monitoring of the market price during the reference period to identify when the opening should be triggered); (ii) documentary formalities (notification of the Commission that the trigger has occurred, general meeting to take the actions specified in the law); (iii) administrative arrangements (procurement of the facilities for the buy-back and cancellation of old shares, and administration of the stockholders register by SCP or a sub-contractor); (iv) operation of the buy-back (actual purchase of the shares or units by the

investment company on behalf of the fund, maximum period for redemptions after the initial request—for example, 1 week); (v) establishment of rules for temporary suspensions, when the redemptions cannot be met during the prescribed period.

Temporary Suspension of Redemptions. If redemptions are too large to be met by an orderly disposal of the fund's assets, the management company should be allowed to apply for a temporary suspension of redemptions, while continuing receipt of redemption requests. At the end of the suspension period all the outstanding requests would be exercised at the same price.

There should be nothing to prevent secondary trading in the fund units to continue during the suspension period. This would not be undesirable, since it would give the opportunity to those who wished to liquidate their holdings rapidly a means of doing so, and the continuation of trading both in fund and company shares could contribute to maintaining market transparency. Nonetheless, if at the end of the suspension period there is a need for large scale liquidation of the portfolio, the market organizers or the stock exchange should have made suitable preparations, for instance by arranging for single price auctions for the major holdings.

Temporary Regulatory Forbearance During the Opening. If some of the fund's illiquid shares exceed the legal limit of 10 percent of total assets due to redemptions, the Commission may have to grant a period of regulatory forbearance, in order to allow the fund to remain in compliance while proceeding with the opening. The Commission may also consider encouraging the merger of these funds with other funds, in order to dilute the excess participation in a larger pool of assets.

Conversions During the Opening. Some funds may consider converting into holding companies, in order to avoid the opening and the requirement for greater portfolio diversification. Since new conversions now require two-thirds majority and the redemption of shares of dissenting shareholders at NAV, the fair treatment of these shareholders would be in principle guaranteed. However, the Commission would need to monitor the valuation of the fund's assets and ensure that redemptions are conducted at fair prices. If a situation of illiquidity emerges, the Commission should make sure that it is solved before the conversion actually takes place.

Ensuring Compliance after the Opening. The large-scale opening of closed-end funds would be made much easier if standardized texts for management contracts (i.e. their articles of association which are at the same time their prospectus), depository contracts and management company articles of incorporation were approved by the Securities Commission. Such texts often exist abroad and they might be elaborated in co-operation with the association of investment funds (UNIS).

Improving Pricing Rules

The regulators should consider reviewing the Decree on NAV, and replace the historical pricing method by the forward pricing method (which involves computing the NAV by closing prices in the same day or opening prices in the following day). Although forward pricing is not an explicit requirement for EU accession, it has been applied in most EU countries, because it protects the fund against losses. The regulators may also grant some leeway for managers to price securities issued by enterprises in bankruptcy, or when there is no trading, as in these cases the last traded price may be irrelevant. It might be better to leave it up to the fund managers to value such securities, as long as their method is disclosed in the fund's reports, the depository agrees with it, and the auditors give a favorable opinion about it.

The Securities Commission should ensure that there is single pricing of open funds' shares, in the cases where the shares are also traded in secondary markets. First, the Commission, should ask managers of open funds to determine whether there is any justification for their funds to remain listed. If the funds' shares remain traded in the PSE or the RMS, the Commission should introduce rules to ensure single pricing by mandating that the shares be negotiated at NAV minus/plus a margin.

The law still allows an excessively long period of one month for the redemption's of fund shares after the initial request. The Investment Fund Act or the decree on NAV should be adjusted to shorten the maximum period of redemption, or accrue interest on NAV to compensate for the delay.

Further Adjustments in the Regulatory Framework Required for Integration into the EU

In addition to the measures recommended above, there are a number of further adjustments in the regulatory framework that must be contemplated, in order to ensure full compliance with EU legislation and facilitate the integration into the common market.

There are two main EU directives which apply specifically to collective funds: the Directive 85/611/EEC of 20 December 1985 (completed/amended by directives 85/612/EEC, 88/220/EEC, and 95/26/EC) on the undertakings for collective investments in transferable securities (UCITS), familiarly known as the UCITS directive; and the Directive 93/22/EEC of 25 March 1993 (amended by directive 95/26/EC) on investment services in the securities field, usually called the investment services directive or ISD. There are also some other directives which have a more general application (e.g., in the tax area), but that may have important consequences for collective funds as well.

The UCITS directive will apply to most Czech funds at the time of accession, because these will be open common funds whose objective is the collective investment in transferable securities listed on a recognized regulated market with capital raised from the public in at least one EU member state, they operate on the principle of risk spreading, and their units are redeemed out of their assets upon request. The directive will not apply to closed-end funds, either formed as joint-stock companies or unit trusts, because these are closed-end undertakings. However, there will be very few closed-end funds, if any, at the time of accession, because the existing ones will have to be opened by 2002.

The full harmonization of the legal and institutional framework should not be difficult to achieve, because the new Investment Fund Act and the Decrees are already largely in harmony with the requirements of the UCITS directive. Indeed, as required by the directive, Czech open funds are already managed by specialized management companies with sufficient means. A supervisory authority is in place and a bank must be appointed as depository. The units are redeemable on the basis of their NAV, and the accounts must be audited by a recognized auditor. However, some aspects of the regulatory framework will require adjustments, as discussed below.

The publication of a prospectus will not be needed, because Czech law stipulates that an open fund's articles of association replace the prospectus, but the minimum contents of the prospectus (or the articles of association) and of the periodical reports will have to respectively follow the requirements of Schedules A and B annexed to the UCITS directive. Although they already contain most of the information required, Czech law does not, for instance, oblige fund managers to publish full and detailed portfolio composition but only holdings representing .25 percent or more of a fund's assets. This obligation will have to be extended to all holdings.

As for the investment policy, the Czech law allows funds to invest up to 10 percent of their assets in securities issued by the same company, while the directive allows this only insofar as all holding over 5 percent of a fund's net assets do not altogether exceed 40 percent of net assets. Furthermore, the directive sets a limit of 10 percent of net assets for investments in securities not listed on a regulated market. The newly-amended Czech law only allows funds to invest in listed securities of private issuers from OECD member states. For government bonds (also of OECD countries), there is no listing requirement. The law should therefore be slightly adjusted in this respect.

The recent reduction of the maximum fund holding, from 20 to 11 percent of a company's capital, is in line with the UCITS directive, which doesn't impose any explicit maximum percentage (except for non-voting shares, where there is a 10 percent limit), but which states that a fund family may not acquire shares carrying voting rights which would enable it to exercise significant influence over the management of an issuing body (article 25). The simplest thing to do would be to bring the 11 percent Czech limit down to 10 percent across the board, but it would be better still to rewrite the text of the Czech law, in order to strictly follow the directive.

More significant changes should be made in order to strengthen the role of the depository. According to the UCITS directive (Article 7), the assets owned by an open fund have to be in the safekeeping of the depository, which therefore has to be a custodian, whereas under Czech law, the depository merely supervises the fund's securities portfolio. The law should be changed so that the depository (and no longer the management company) will give instructions concerning the securities deposited in the fund's account at SCP. Designating sub-custodians abroad for safekeeping the fund's foreign assets should normally be done by the depository or at least with its prior approval, for the depository will be responsible for any irregularities committed by a sub-custodian. Czech law will also have to allow not only banks to be depositories, but also investment firms authorized to provide the non-core services mentioned in the ISD.

Upon accession, Czech legislation will have to allow UCITS from members of the European Economic Area (EU plus Norway, Iceland and Liechtenstein) to market their shares in the Czech Republic (the European passport). This will have important consequences for tax policies--the Czech authorities should ensure a level playing field and remove the tax disadvantage presently affecting Czech funds. This implies exempting them from VAT, as already mentioned, and also removing the taxation on income and capital gains which is presently imposed at the fund level (and which ultimately implies double taxation). This is not a requirement of EU law, but a logical consequence of harmonization.

The UCITS directive specifies that cross-border sales of funds holding the UCITS passport are subject to the marketing legislation of the host country. The ISD excludes UCITS and other collective investment funds from its scope, but sets some general rules for purchases and sales of their shares. The Czech regulators will have to assess the implications of the ISD on their fund marketing legislation and practices. For example, foreign competition will probably lead to hard selling. The Czech Republic should get ready by preparing, along the lines drawn by the ISD, a legislation preventing abusive or fraudulent sales practices such as untrue or incorrect presentations, unfair contracts and excessive sales commissions. Door-to-door selling of funds and also of other financial products should either be forbidden or strictly regulated, for instance by allowing prospects a grace period to cancel their orders. Remote or distant selling (by mail, phone, or computer) should similarly be regulated.

Another approach to marketing regulation is to encourage self-regulating groups of fund managers to establish and enforce codes of conduct on their members, who can then display a label of

good conduct and quality. In some countries, such groups even acquire an official status, and a magistrate chairs their disciplinary body, which can then impose fines on offending members. This approach is a good way of implementing Article 11 of the ISD, which requires a code of conduct relating to transactions in transferable securities, as described in the annex to the European Commission's recommendation 77/534/EEC of 25 July 1977.

Before entry into the EU, the Czech authorities should review the consistency of the whole legal framework so as to avoid regulatory arbitrage by financial institutions. The rapid emergence of large bank assurance groups in Europe reveals that the adoption of a certain legal form for a collective investment scheme depends on various aspects, such as taxation, marketing, pricing, supervision and disclosure rules. Governments should be aware of this in order to avoid creating legal discriminations which can only lead to regulatory arbitrage.

The Czech regulators should avoid creating any unjustified discrimination between financial products, so as not to lead to unnecessary regulatory arbitrage and distortions in the capital market (for instance, when an investor is led to take a life insurance policy rather than to buy mutual fund shares, and is subject to heavy early withdrawal fees if he needs his money back). One of the best ways of avoiding regulatory arbitrage is to ensure co-operation between the relevant supervisory authorities, as actually required by the law governing the Securities Commission. It does not mean that a merger of these authorities would be advisable at this stage, because the new-born Securities Commission must first learn to do its job well.

Regarding taxation, there is a provision in the sixth VAT directive (Directive 77/388/EEC) which exempts fund management from the VAT, and which leaves it up to the home country to determine which funds are to be exempted. This VAT exemption could amount to about half a percent of a fund's net assets each year, and the Government may consider applying the exemption to all Czech funds. The Government should investigate how the various member countries have applied this exemption, *sensu stricto* only to management company fees or *sensu lato* also to other fund management fees such as the depository fees.

The Role of the Securities Commission

The Securities Commission can play a very important role in developing the fund industry, even though it has not been given regulatory powers. It has substantial enforcement powers and, like all similar agencies in the world, it will also be in a position to exert quasi regulatory powers in implementing and interpreting the law. For instance, it is up to the Securities Commission to set guidelines for judging the professional qualifications of directors and staff of management companies, or to force a change in management. During the opening process, it might authorize some funds to temporarily suspend redemptions for lack of liquidity. In all sorts of cases, the Commission should develop a doctrine, a sort of case law, which it will have to report publicly. It is important for fund managers to be regularly kept informed about this doctrine, so that they will know how to behave in similar circumstances.

Contacts with the collective fund industry should be regular and not limited to supervisory tasks. Relations with the industry association are a part of this facet. For instance, in Luxembourg, the supervisory authority has an unofficial body of advisors from the financial sector and its satellite professionals (lawyers, auditors, accountants, depositories, etc.). The Commission should also strengthen professional relationships, not only with other supervisors in the Czech Republic (in order to

improve supervision and minimize cases of regulatory arbitrage), but also with fund supervisors in other EU countries (in order to gain better understanding of EU legislation and practices in this area).

Handling Holding Companies

The best strategy towards holding companies is to introduce greater transparency in their operations and to provide minority shareholders with reasonable exit opportunities. In order to achieve this goal, the Commission may consider adopting two sets of measures. First, improving the internal mechanisms of corporate governance for all joint stock companies along the lines suggested in Chapter 4. Second, the Commercial Code should be amended to impose additional disclosure rules in the case of holding companies—rules that are similar to those imposed on investment funds. These two sets of measures (which are elaborated in more detail in Chapter 4) would increase the transparency in the operations of holding companies, make it more costly for these companies to remain public, and induce majority shareholders to buy the shares of minority shareholders at a fair price.

Opening Space for Genuine Venture Capital Funds

The regulators should consider adapting the regulatory framework so as to open room for the creation of genuine venture capital funds in the future. The new Investment Fund Act allows new closed-end funds to be formed, but subjects them to the same regulatory framework applied to open funds. Closed-end funds may play an important role as providers of venture capital, but they must be exempt from the more restrictive regulations that apply to open funds, allowing them to invest in more risky and less liquid ventures. The same is true for other institutions capable of providing venture capital, such as limited partnerships. These are arrangements whereby institutional investors, non-financial corporations or wealthy individuals act as limited partners that provide the capital, while professional managers serve as general partners, specializing in identifying and managing equity investments in closely-held unlisted companies.[27]

Closed-end funds and limited partnerships could be subject to more liberal portfolio restrictions, allowing them to hold much larger portions of equity and to exert the active governance that was initially expected from investment funds at the start of the voucher privatization scheme. Closed-end funds should be required to issue prospectuses, and limited partnerships to establish agreements that spell out clearly the rights and obligations of managers (general partners) and investors (limited partners). These institutions could be subject to some restrictions on investment and other operational rules, but these rules would be substantially more liberal than those applied to open funds. The regulatory framework could ensure that the operations of these institutions fall under the supervision of the Securities Exchange Commission, who could perform an advisory capacity and avoid or resolve conflict of interest situations.

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[27] Limited partnerships and venture capital funds have become an important source of finance in the US and other countries for new firms, medium-size firms in expansion, firms in financial distress, and listed companies seeking buyout financing. They have been the fastest growing source of corporate finance in the US in the past 15 years, with a total of US$175 billion in 1995 (Prowse (1998)).

CHAPTER IV: CORPORATE GOVERNANCE

Introduction

Corporate governance is usually understood as the ways in which suppliers of finance assure themselves of getting a return on their investment, irrespective of whether this investment takes the form of equity or debt. Although corporate governance systems vary greatly around the world, there is some consensus that good governance systems should involve a combination of large investors (shareholders and/or creditors), and mechanisms ensuring the legal protection of their rights and the rights of small investors. Countries where large investors play a central role (Continental Europe) may rely somewhat less on the legal protection of investors, whereas countries where large investors play a less important role (US and UK) must set up stronger legal mechanisms for investor protection. However, an effective governance system should always combine both elements.[28]

The innovative voucher privatization program implemented by the Czech Republic in 1993/94, relied ultimately in a progressive concentration of enterprise ownership by investment funds and strategic investors through secondary trading. As discussed in Chapter 2, the distribution of vouchers was indeed followed by intense secondary trading, and this trading has resulted in greater ownership concentration, not only by investment funds and holding companies, but also by strategic investors. However, the question of whether the emergence of larger shareholders in Czech enterprises has translated into improved corporate governance remains surrounded in controversy.

The available indicators of efficiency and restructuring do portray a rather mixed picture, and the empirical literature also provides conflicting conclusions about the effectiveness of institutional investors in exercising corporate governance. More generally, it has been claimed that the governance of several privatized enterprises remains weak, not only because institutional investors such as investment funds are not exercising the governance role effectively, but also because several new owners are exercising control for personal gains and against the interests of minority shareholders. Corporate governance has also been affected negatively by some remaining obstacles to take-overs and the absence of effective monitoring by creditors due, in turn, to the financial weakness of the major banks, and the deficiencies of the bankruptcy framework.

This chapter assesses the improvements in governance that may have resulted from greater concentration of ownership and changes in the regulatory framework, and identifies the policy measures that would promote further improvements in corporate governance and further enterprise restructuring. The chapter is structured as follows. The second section assesses the extent to which ownership has been consolidated through secondary trading. The third section reviews the available indicators of restructuring and the results of the empirical literature. The fourth section examines the mechanisms for corporate governance in the Czech Republic, both from the side of shareholders and from the side of creditors. Finally, the fifth section provides several recommendations for improvements in governance mechanisms.

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[28] Schleifer, and Vishny (1996), and La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998).

Concentration of Ownership after Coupon Privatization

As mentioned in Chapters 2 and 3, following the completion of the two waves of the Czech mass privatization program, some 1,700 joint stock companies were formed and privatized. The voucher scheme was a central component of the privatization program, and investment funds acting on behalf of voucher holders were a major player in this component of the program. Other players included individual Czech citizens directly exchanging vouchers for shares, and strategic investors participating through direct sales or through the purchase of shares from funds and individuals already in the early stages of the program. The State retained substantial shareholdings (through the National Property Fund) only in the electric power, coal mining, telecommunications and banking sectors, although these are usually large enterprises accounting for a large share of total combined equity.

After the completion of each of the two voucher waves, most of the funds started consolidating their portfolio strategies through secondary trading. The strategy of several funds was to build a larger longer-term equity position in a reduced number of enterprises, subject to the 20 percent ceiling, while in other cases the strategy was to build blocks of shares and transfer them to a third party, frequently connected to the same financial group. Independent strategic investors (not related to investment companies and investment funds) also consolidated their equity positions in numerous enterprises, either through block trading or by slowly buying shares in the retail (auction) markets of the PSE and the RMS.

Secondary trading has resulted in greater concentration of ownership, as shown in Table 4.1. Between 1994 and 1997, strategic investors increased their share in the ownership of these enterprises by approximately 15 percent, largely at the expense of individuals and minority holdings of investment funds. Moreover, although investment funds as a group increased their share by a very modest amount, there was a greater concentration of enterprise ownership by several individual funds, subject to the limit of 20 percent of the enterprise equity. Finally, the Government increased its participation by 6 percent, but this is due to price fluctuations, and not to additional holdings of equity by the Government--during this period, the prices of small enterprises dropped drastically relative to the prices of large enterprises, particularly the utilities held by the Government.

A more clear assessment of ownership consolidation can be obtained by examining the position of the largest enterprise owners. As indicated in Table 4.2, the share of listed enterprises having a large owner holding more than 30 percent of equity increased from only 7 percent in 1993 to 73 percent in 1997. Owners holding more than 30 percent are probably strategic investors and holding companies, as investment and mutual funds cannot hold more than 20 percent of enterprise equity (although this restriction can be circumvented in practice through connected holdings within the financial/industrial group). Most enterprises with a very large owner are probably medium and small enterprises, and the ownership data probably suffers from a number of classification problems. However, it seems that ownership concentration in the Czech Republic has reached levels similar to the levels of Continental European countries and higher than the levels prevailing in the US and the UK.

Additional information on ownership concentration is provided in Table 4.3, which shows the nature of the largest owner in a sample of more than 700 joint stock companies. Strategic investors were the largest owner in 36 percent of enterprises in this sample. Strategic investors are not subject to restrictions on the amount of equity that they can hold, and in several cases they may hold more than 50 percent of total equity. Non-bank funds are the largest owner in 42 percent of enterprises. These include investment funds proper and funds converted into holding companies. The first group is subject to a 20 percent limit on equity holding, but the second group is not, and probably holds large stakes in

many enterprises. Finally, bank-sponsored funds are the largest owner in only 13 percent of enterprises. This low percentage is not surprising—funds are generally subject to the 20 percent limit, and bank-sponsored funds have from the start pursued more diversified portfolio policies. Overall, the results in Tables 4.1-4.3 indicate a consolidated ownership structure, with strategic owners holding the largest stakes, particularly in the case of medium and small companies.

Table 4.1: Ownership of Czech Joint Stock Companies [a/] (% of total market value)

	Largest 60		Other 1,500		Total	
	1994	1997	11994	111997	1994	1997
Government	43.1	46.1	4.1	6.5	37.0	42.9
Bank-sponsored Investment Funds	9.9	8.5	18.0	13.9	11.2	9.0
Other Funds/Holdings	11.4	16.8	30.2	30.3	14.3	18.0
Strategic Investors	3.2	16.9	0.0	21.7	2.7	17.3
Others [b/]	32.4	11.7	47.7	27.6	34.8	12.8

a/ Estimated from ownership data for the largest five owners of 716 out of 1,600 firms.
b/ Individuals and dispersed holdings of investment funds.
Source of raw data: Aspekt.

Table 4.2: Ownership Concentration in Listed Firms (%)

Largest Owner's Share	>50	30-50	10-30	5-10	<5
Czech Republic					
1993	1	6	85	6	2
1994	4	8	73	12	3
1995	10	16	62	9	3
1996	23	27	43	5	2
1997	38	35	22	4	1
France	55	21	16	5	2
Germany	66	14	9	7	5
Italy	89	7	2	2	2
Spain	49	22	17	10	2
Sweden	42	31	12	11	4
United Kingdom	5	29	27	30	9
Japan	5	15	25	30	25
United States	9	29	10	29	23

Source: Benn Steil (1996), *The European Equity Markets*, Aspekt.

Table 4.3: Largest Owners of a Sample of Czech Joint Stock Companies

	Number of Firms	Percent of Total
Largest owner is a fund (excluding bank fund)	359	41.6
Largest owner is a bank fund	109	12.6
Largest owner is not a fund	309	35.8
Ownership dispersed among small holders (less than 5%)	87	10.0
TOTAL	864	100.0

Source: Weiss and Nikitin (1997).

Ownership Concentration and the Quality of Corporate Governance

The Differences Among Large Investors

Leaving aside the large companies in which the State still retains a controlling share (primarily banks and utilities), the controlling shareholder block might be a strategic investor, a fund converted into a holding company, or an investment fund (or a group of funds). It is possible to identify important sub-categories in each of these three major classes of owners. For example, the strategic investor may be domestic or foreign, fully independent or connected with an investment fund, and may

also coincide with the former management of the company. The investment funds may be bank-sponsored or independent from banks, and may adopt the form of a joint stock company or a unit trust.

There are two important and related questions frequently raised by policy-makers and researchers inside and outside the Czech Republic. The first is the extent to which the greater concentration that followed the mass privatization program induced enterprise restructuring. The second is the extent to which institutional investors such as investment funds contribute actively to the restructuring process.

In assessing changes in the competitiveness of Czech enterprises, it would be natural to expect improvements in performance associated with the presence of a large investor. Indeed, the emergence of larger investors exercising their control rights would be expected to close the gap between ownership and control that underlies most governance problems. At the same time, early observers of the Czech privatization program raised doubts as to whether investment funds would have the same incentives as strategic investors to restructure the enterprises, not to mention the resources and the skills (e.g., Coffee (1995)).

Although it was acknowledged that most funds had made an effort to trade shares, consolidate their equity positions and obtain board representation, it was also pointed out that investment funds were constrained to a maximum holding of 20 percent of the equity of a privatized enterprise. The reduced scope and incentive for active control implied by the 20 percent limit could be in principle circumvented by coordination and concerted action among different funds.[29] However, the critics of the Czech program pointed out that there were many other incentive problems affecting fund behavior. First, the closed-end investment funds and unit trusts faced governance problems of their own. Second, the fee structure (maximum 2 percent of net asset value) did not provide sufficient incentives for these funds to manage assets actively. Finally, management contracts between funds and management companies were written in a form so as to practically block takeovers and the market for corporate control (Coffee (1995), Cohn (1997), Kotrba, Kocenda and Hanousek (1998)).

The rules constraining funds to hold no more than 20 percent of the enterprise equity and the rigid fee structure were seen as major obstacles for active governance, and may have led many observers to welcome the conversion of several investment funds into holding companies in 1996 (which were not subject to these and other restrictions). The fact that the motivation of most of these funds was to escape regulatory control altogether, that minority shareholders were not sufficiently protected, and that creditor rights were weak was probably minimized by most observers of the Czech situation during this period.

Indicators of Restructuring

The extent of restructuring in Czech enterprises may be assessed by examining some cross-country indicators of financial performance and by reviewing the empirical literature. The cross country comparison is made by examining aggregate data on enterprise losses and profits provided by the Central Statistical Offices of CEE countries, and by examining the share of the best enterprises in total enterprises in a larger sample of countries. In both cases, the comparison has to be interpreted

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[29] As mentioned in chapter 3, the ceiling applied to the aggregate holdings of corporate funds under the same management company. Unit trusts were subject to a separate 20 percent ceiling, so that a management company running both types of funds could hold 40 percent of a company. It seems that frequent violations of the 20 percent ceiling for corporate funds also occurred.

with a great degree of caution, due to differences in sample size and accounting practices across countries. Even when accounting standards are similar, the absence of inflation accounting in the region may distort the comparison and penalize higher inflation countries (due to higher nominal interest payments). However, the exercise may still provide some useful information, especially if it is focused in comparing trends in performance in each country, rather than a direct comparison of levels across countries.

As shown in Table 4.4, the gross losses of Czech enterprises declined significantly as a share of GDP during the 1993-95 period, whether losses are measured for industry as a whole or restricted to the manufacturing sub-sector. Although gross profits did not increase during this period, there was also a significant increase in net profits, particularly in manufacturing. These early positive results were probably due in part to macroeconomic factors, such as a very competitive initial exchange rate and the stringent fiscal and credit policies followed during this period, but they reflect restructuring at the enterprise level as well. However, the positive trend in financial performance was broken in 1996, and only partly recovered in 1997. Whereas gross losses declined again in 1997, the decline is not particularly impressive, and is in fact offset by lower profits in the case of industry. Overall, the financial position of enterprises seems to be back to the 1994-95 levels.

Despite the recent setback, the financial performance of Czech enterprises still seems superior to the performance of enterprises in the Slovak Republic and Slovenia. In the Slovak Republic, the interruption of the positive 1993-95 trend was even more abrupt, and there was no visible improvement in 1997. Slovenia does not show a very clear trend in the 1993-96 period. Moreover, although there was apparently an improvement in 1997, net profits are still zero or negative, unlike in the Czech Republic. However, the performance of Czech enterprises looks clearly inferior to that of Hungarian enterprises, as seen by the very clear trends of declining losses and increasing gross and net profits in the Hungarian case. The data for 1997 are still not available, but are expected to show further significant improvements, given the strong growth performance of Hungary during that year.

The examination of returns on assets (ROA) and returns on equity (ROE) for a sample of 450 Czech enterprises over the 1993-97 period shows a similar pattern—an improvement in financial performance in 1995, followed by a sharp deterioration in 1996, and only a modest recovery in 1997. The results of this exercise (provided in detail in Annex 2), also show that the performance of medium and small firms has been worse than that of larger firms, as indicated by much lower average nominal ROEs (1-3 percent, compared to 3-6 percent for the larger firms). The very low and generally declining average nominal ROEs of medium and small firms to around 1 percent in 1997, is actually consistent with the decline in their price-earnings ratios to very low levels (Chapter 2).

A cross-country comparison of the share of the best enterprises (those with a positive cash-flow) in total enterprises yields a similar picture. As shown in Figure 4.1, Czech enterprises seem to build an advantage over enterprises in other countries early in the transition period, but do not seem to sustain the initial momentum in following years, especially in 1996, when there was a deterioration. The Slovak Republic and Bulgaria also experienced a deterioration in the same year, but other countries

seemed to be catching up fast. Unfortunately, the comparison ends in 1996 for most countries and in 1995 for Hungary, not allowing an accurate assessment of the present situation.[30]

Table 4.4: Enterprise Losses and Profits in Selected CEE Countries (% of GDP)

Gross Losses							
	Average Sample Size	1992	1993	1994	1995	1996	1997
Industry							
Czech Republic	989		4.1	2.6	2.0	2.5	2.2
Slovenia		10.0	4.8	3.8	3.7	4.7	3.4
Poland				2.0	2.1	1.7	
Hungary[1]	537		2.4	1.9	2.6	1.8	
Hungary[2]	10,603	6.7	4.0	3.3	3.6	2.7	
Slovak Republic	841		5.6	4.1	3.2	5.4	5.3
Manufacturing							
Czech Republic	793		3.7	2.3	1.8	2.3	1.9
Slovenia		6.8	3.3	2.6	3.0	3.4	2.2
Poland				2.0	1.7	1.5	
Hungary[1]	416		2.2	1.3	1.0	1.0	
Hungary[2]	7,161	5.6	3.3	2.3	1.8	1.6	
Slovak Republic	856		4.7	3.7	2.9	4.6	4.5
Gross Profits							
	Average Sample Size	1992	1993	1994	1995	1996	1997
Industry							
Czech Republic	1,502		8.5	7.7	7.5	5.3	4.8
Slovenia		0.9	1.2	2.0	2.1	2.2	3.0
Poland				6.0	6.0	5.1	
Hungary[1]	1,116		2.2	2.5	3.7	4.3	
Hungary[2]	12,048	2.8	3.3	3.6	4.6	5.5	
Slovak Republic	895		12.8	9.9	9.7	9.3	8.2
Manufacturing							
Czech Republic	1,362		4.1	4.0	4.2	3.0	3.3
Slovenia		0.8	1.0	1.7	1.8	1.9	2.6
Poland				4.3	4.5	4.1	
Hungary[1]	892		1.9	2.2	3.5	4.0	
Hungary[2]	7,917	2.0	2.6	3.0	4.3	4.9	
Slovak Republic	851		4.6	4.0	4.4	4.6	4.5
Net Profits							
	Average Sample Size	1992	1993	1994	1995	1996	1997
Industry							
Czech Republic	2,491		4.4	5.1	5.5	2.8	2.6
Slovenia	6,075	-9.1	-3.6	-1.9	-1.7	-2.5	-0.4
Poland				3.8	4.0	3.0	
Hungary[1]	1,654		-0.3	0.5	1.1	2.5	
Hungary[2]	22,651	-3.9	-0.7	0.4	1.2	2.8	
Slovak Republic	1,775		7.2	5.8	6.6	3.9	2.9
Manufacturing							
Czech Republic	2,155		0.3	1.7	2.4	0.7	1.5
Slovenia	5,868	-6.0	-2.2	-0.9	-1.2	-1.5	0.3
Poland				2.3	2.9	2.7	
Hungary[1]	1,308		-0.3	0.9	2.5	3.0	
Hungary[2]	15,077	-3.5	-0.7	0.7	2.6	3.3	
Slovak Republic	1,707		-0.2	0.3	1.5	-0.1	-0.1

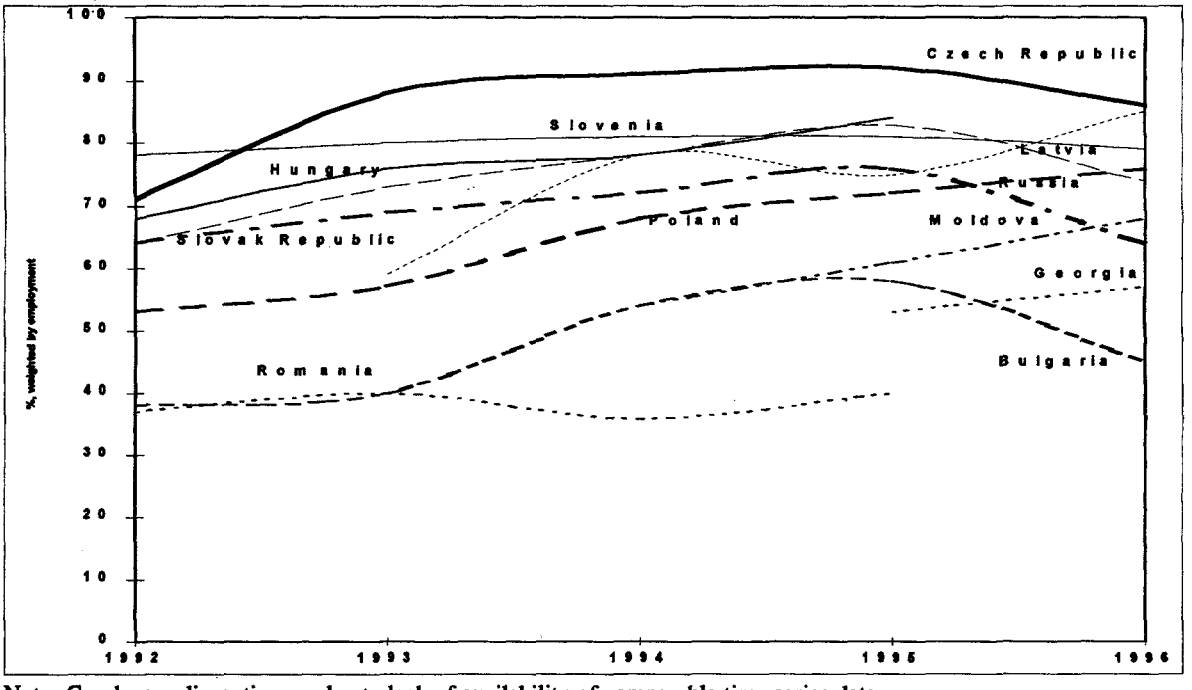
Note: Data are before tax and before distribution of dividends.

In the Czech Republic, data are for non-financial enterprises with 100 or more employees. In the Slovak Republic, data are for non-financial enterprises with 20 or more employees. In Hungary (1): data is for the group of large companies. This group includes joint-stock companies and all those enterprises where in two subsequent years two out of three indicators are above the following limits: (i) the value of total assets/liabilities is over 150 million HUF; (ii) annual sales are over 300 million HUF; (iii) the number of employees is over 100. In Hungary, (2): data are for all non-financial enterprises with double entry book-keeping. These are enterprises whose sales exceed 50 million HUF in two subsequent years. In Poland, data covers all enterprises and individuals who employ more than 5 persons.

Source: Central Statistical Offices of the respective countries.

30 Note that Figure 4.1 just shows the share of enterprises with positive cash-flow, and not the size of the financial result relative to equity or assets. Note also that the main sources of enterprise data for the Czech Republic (the Central Statistical Office and the Aspekt Company) have indicated that the quality of enterprise data in 1992 and 1993 is very poor. Therefore, the results for those two years should be treated with additional caution.

Figure 4.1: Firms with Positive Cash-Flow, 1992-96 (percentage of firms, weighted by employment)



Note: Graphs are discontinuous due to lack of availability of comparable time series data.
Source: Pohl et al (1997)

A Review of the Empirical Literature

These comparisons provide some information on the general situation in each country, but do not reveal the differences across enterprises in each country. There is a range of important questions that remain unanswered, such as the extent to which privatized enterprises performed better than State enterprises, and whether enterprises controlled by strategic investors performed still better than enterprises controlled by institutional investors, such as investment funds. For this purpose, it is useful to review the results of empirical studies addressing these questions.

An earlier analysis of enterprise performance for the 1992-95 period over a sample of several transforming countries concluded that privatized enterprises had performed better than State enterprises, but that different privatization methods yielded similar results. The same study used data for the same period but restricted to the Czech Republic, concluding further that privatized firms with concentrated ownership had restructured more than firms with dispersed ownership (irrespective of the privatization method), and that firms with ownership ties with banks had restructured even more (Pohl et al (1997)). These conclusions were drawn by examining a number of measures of restructuring (e.g., profitability, growth in labor and total factor productivity) for all countries, and by running a number of regressions with Czech data, using either profits or Tobin's Q as the measures of financial performance and restructuring.

Unfortunately, the sample period ends in 1995, excluding precisely the years when Czech and Slovak enterprises experienced a deterioration or stagnation in their financial performance (Table 4.4 and Figure 4.1). Furthermore, the reported econometric results for the Czech Republic show a rather mixed picture. The regressions explain only 8-20 percent of the variations in performance across enterprises, the results (signs and magnitudes) change considerably depending on the dependent variable which is utilized, the sign of the concentration variable shifts from positive to negative when additional

variables are included in the regression, and the sign of the National Property Fund dummy (measuring State ownership) is positive in all the regressions and significant in one of them.[31]

A more recent analysis of the performance of Czech enterprises employs data for 755 enterprises over the 1993-96 period, and concludes that ownership concentration and the type of ownership both and jointly affect performance. Enterprises with large investors non-associated with investment funds experienced an improvement in performance, whereas enterprises controlled by investment funds and State enterprises did not experience an improvement in performance (Weiss and Nikitin (1997)). Moreover, there seems to be no significant difference between the performance of enterprises controlled by independent funds and bank-sponsored funds. The sign of the coefficient of the variable representing bank-sponsored funds is actually negative, although not significant. These conclusions are reached by using a variety of indicators of performance (changes in value added per worker and unit of capital, as well as changes in profits per worker and unit of capital) and seem to be robust across alternative indicators.

Although both studies may be affected by the doubtful quality of ownership data (the data reflects the holdings of the primary owner but not the web of corporate relationships) and other methodological problems (e.g. endogeneity), Weiss and Nikitin's results seem more consistent with most assessments of the Czech situation (e.g., Coffee (1996), Kotrba, Kocenda and Hanousek (1998), and MoF (1997)). Coffee had raised early doubts on the lack of incentives for investment funds to lead enterprise restructuring. Kotrba, Kocenda and Hanousek conclude that the exercise of ownership rights by owners in general and investment funds in particular has been rather poor on average. Finally, the MoF arrives at similar conclusions, pointing out to the high discounts of several funds, and stating that many funds had abused their positions of control over Czech companies.

The Government's Response

The Czech Government has identified many of the flaws in the regulatory framework for the capital market, and has made an effort to correct these deficiencies in the last few years. As mentioned in Chapter 3, important amendments to the Commercial Code and the Investment Fund Act became effective in July 1996. The amendments to the Commercial Code strengthened minority shareholder protection in particular by, *inter alia:* (i) introducing a number of rules concerning general meetings; (ii) mandating a large shareholder to offer to purchase the shares of minority shareholders every time its holdings exceeded 50,66, and 75 percent of the enterprises' equity; (iii) requiring a 75 percent majority for key decisions; (iv) requiring the disclosure of purchases of shares amounting to more than 10 percent of the enterprise's equity and; (v) introducing stricter liabilities on companies' boards.

The 1996 amendments to the Investment Fund Act strengthened the governance of funds by, *inter alia*: (i) enabling supervisors to intervene in a fund, change its management and withdraw the license of the management company; (ii) improving disclosure rules and, most importantly; (iii) requiring a 2/3 majority for the conversion of funds into holding companies and obliging the fund to redeem the shares of dissenting shareholders at net asset value.

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31 The authors seem to give more weight to the results using Tobin's Q as the dependent variable. However, the measure of Q was constructed using the auction prices in the Prague Stock Exchange. As shown in Chapter 2, PSE auctions accounted for a very small share of total turnover, and there were significant differences between the PSE auction prices and the direct prices in other trading channels. These differences raise serious doubts on the representativeness of the constructed Tobin's Qs.

The regulatory framework for the capital market was further improved in the first half of 1998, when other amendments and new pieces of legislation became effective. These included an amendment to the Act on Banks, the introduction of an independent Securities Commission, and further important amendments to the Investment Fund Act. The amendments to the Act on Banks attempt to reduce the possible conflicts of interest that may arise when banks are creditors and shareholders at the same time by separating the banks' credit and investment activities. It does so by, inter alia: (i) forbidding banks from exercising control on non-financial enterprises; (ii) forbidding members of bank boards from being members of boards of other companies and; (iii) restricting holdings of equity as a share of the bank's capital (15 percent in the case of one company and 60 percent overall).

The Securities Commission Act was enacted in early 1998, and the Commission started operating in April of the same year. Although the Commission remains financially dependent from the budget, and is not able to issue regulations directly (all the rules have to be issued as Government Decrees), the Act endows the Commission with substantive enforcement powers and opens room for the recruitment of high level professionals by paying salaries above the public sector wage scales. Finally, the amendments to the Investment Fund Act were discussed in Chapter 3, and include the mandatory opening of investment funds and closed-end units trusts, as well as the reduction in the maximum holding of a company's share, from 20 to 11 percent of the company's capital.

These efforts by the Government will contribute to strengthening corporate governance of both enterprises and investment funds. The recent amendments to the Investment Fund Act may prove particularly important. For the first time since their creation, fund managers will have a powerful incentive to perform well, as good performance will be rewarded by an inflow of resources and larger profits for the management company. The reduction of the maximum holding limit--from 20 to 11 percent--will induce the funds to sell some of their shares and will open room for greater participation of genuine strategic investors in Czech companies.

Although all the measures described above represent a very important step in the right direction, the question remains as to whether the internal and external mechanisms of corporate governance in the Czech Republic are already robust, or whether some deficiencies still remain. The next section attempts to answer this question by reviewing the mechanisms of governance and identifying the scope for further improvements.

Internal Mechanisms of Corporate Governance

The Basic Elements of Internal Governance

The objective of a good internal governance system is to ensure sound corporate decision-making which reflects the interests of the shareholders of the company, both majority and minority shareholders. It is important to stress that decision-making should also reflect the interests of minority shareholders, to avoid situations where the majority shareholder uses its position of influence and control to extract personal gains, jeopardizing the financial viability of the enterprise and the interests of minority shareholders and creditors.

There are four broad elements to a sound internal governance framework. The first element is the set of basic shareholder rights, such as the right to attend shareholder meetings and vote, the right to appoint and remove the members of the management and supervisory boards, and the right to receive dividends and to participate in new share issues. The second element is the set of responsibilities of the appointed boards of directors to the company and its shareholders. The third element is the quality of

financial information, not only within the company to the board of directors, but also from the company to the shareholders. The fourth element is the monitoring of the actions of boards of directors.

The existence of basic shareholder rights depends on a number of specific rules designed to give effect to these rights. For example, the right to vote at a shareholders' meeting is typically supported by rules dealing with the convening of shareholders' meetings, ranging from the right for a minimum percentage of shareholders to call a unscheduled meeting, to the period of notice of the meeting, the location where it is to be held, and the means by which votes are to be calculated.

The rights of shareholders in Czech companies are contained in the Commercial Code and in the Investment Funds Act. While these rights are now broadly within the mainstream of civil law (Continental European) countries, it may be argued that the Czech Republic should generally apply more stringent rules than those applied in other Continental European countries, because it has higher number of traded shares and a higher proportion of the population directly or indirectly holding shares. In addition, shareholder rights are frequently not enforced, and there are also some remaining legal gaps that open room for abuse by insiders. Reports abound of actions ranging from the sale (purchase) of assets at low (high) prices to connected parties, to the exploitation of weaknesses in the rules to exclude minority shareholders from participation in key corporate decisions.[32]

Regarding the second element of governance, the Commercial Code is still vague regarding the duties of directors towards shareholders, as it identifies only one general duty: the duty to act with care. In addition, the extent of this duty has not been spelt out either in the law or in decisions of the Czech courts. It says nothing of the responsibility of a director to act in the interests of the company and to avoid self-dealing. This vagueness opens room for abusive behavior, and there are widespread reports of directors, who are often also managers of the company, setting up businesses to enter into "sweetheart" transactions with the company or otherwise allowing the company to sell assets at undervalue or make financial commitments for the benefit of insiders.

Regarding the third element of governance (quality of information), Czech joint stock companies are already subject to extensive disclosure requirements. Companies are required to prepare annual audited balance sheets and income statements, an extensive and detailed annual report, and six month financial statements, unaudited but following a standard format. Companies listed in the Stock Exchange must submit quarterly financial statements as well. Accounting standards are generally in line with international practices, and include the requirement of consolidated accounts, for companies holding a stake of 20 or higher in a subsidiary. This vast body of information must be provided to all shareholders.

Although rules on disclosure of financial information are generally adequate, the Laws and Decrees establishing these rules sometimes fail to stipulate clear deadlines for disclosure and/or do not stipulate sanctions on companies which do not disclose information in accordance with the law. Moreover, even when sanctions are clearly prescribed in the law, they are not consistently applied. This lack of enforcement is reflected in great differences in the quality and completeness of published accounts. The quality of information is also be impaired by the lack of independence of the external

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32 A survey of the largest 2,000 Czech companies carried out by Coopers & Lybrand in 1996 (the Coopers Report), concluded that most insiders did not know their responsibilities to minority shareholders, and that a significant proportion felt that members of their boards either acted in the interests of major shareholders to the disregard of minorities or otherwise did not act in the interests of all shareholders.

auditor from company management—external auditors may be removed by management without reference to the shareholders.[33]

The final element of governance is the monitoring of the boards of directors. The Commercial Code follows the German model and establishes a two-tier board structure for joint stock companies: a management board and a supervisory board. Although both boards represent the shareholders, the Commercial Code does not make either board responsible for enhancing shareholder value. The management board is responsible to running the company, understood as day-to-day management. The supervisory board is responsible for monitoring compliance with the Law. The supervisory board has a minimum of 3 members, two-thirds of whom are elected by the shareholders and one-third by the employees for companies having more than 50 employees. Members of the supervisory board have the right to inspect the company's records and to check if the business activities are in accordance with the law, the articles of association, and the instructions of shareholders in general meetings.

The Commercial Code proposes, as a basic option, that both the supervisory and management boards should be appointed and removed directly by general meeting. Although it makes it possible for the company by-laws to empower the supervisory board to appoint and remove members of the management board, few companies apply this option. For this reason, the role of the supervisory board as a monitor of corporate behaviour is usually limited. The supervisory board can report to the shareholders any concerns it may have concerning the actions of the management board, but in the absence of an express duty to do so, it is likely that supervisory boards will be passive.[34]

The Governance Problem Created by Holding Companies

As mentioned in Chapter 3, during the first half of 1996, some 35 investment funds accounting for around 25 percent of total assets held by investment funds, took advantage of an option under the law to convert themselves from investment funds into holding companies. The wave of conversions was motivated for fear that the authorities would strengthen the regulatory framework for investment funds, and make difficult future conversions (which effectively happened in July 1996). The conversion required only a simple majority of the votes cast and did not trigger any obligation to repurchase dissenting shareholders.[35] Nor was it necessary to obtain prior approval of the supervisory authorities.

The consequences of the conversion were that the funds largely escaped regulatory surveillance, and minority shareholders were locked inside the holdings with little chance of exit and with reduced rights. The holding companies have no obligation to report changes in NAV, the composition of their portfolio and other price-sensitive information. The exclusion of these companies from the regulatory framework for investment funds assumes that these companies are no longer collective investment vehicles. The reality is, however, that the character of the companies has not changed. They continue to hold substantial portfolios of shares and to trade those portfolios. The prices and conditions at which such trading has been conducted has become much more obscure after the conversion, and several of

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33 One major auditing firm was dismissed as auditor after proposing to management that specific related-party transactions be disclosed to shareholders. The transactions were not disclosed.

34 The Coopers report stated that over 40 percent of respondents considered that the supervisory board of their company does not act in the interests of shareholders.

35 As mentioned before, since July 1996, the conversion requires a 2/3 majority and the redemption of shares from dissenting shareholders at net asset value.

these companies have been involved in financial scandals. Minority shareholders wanting to exit can only do so at a very substantial discount (Chapter 3).

The External Mechanisms of Corporate Governance

Remaining Obstacles to Take-overs

The threat of take-overs is an important element of corporate governance, as it maintains discipline on insiders--managers and large shareholders. However, organizing a take-over is not a trivial task, as it may involves, *inter alia,* a strenuous effort to identify a large number of small shareholders and organize a wholesale purchase of their shares. Czech legislation still imposes some obstacles to take-overs, as it does not disclose ownership information, for shareholders holding less than 10 percent of the enterprise equity, nor mandates the enterprise or the registry to disclose the identity of small shareholders upon request of a prospective buyer.

Creditor Monitoring

Creditor monitoring is another important complement to shareholder monitoring to ensure a sound governance system. Creditors can take a range of steps to compel a debtor firm to realize cash in order to pay outstanding liabilities. These steps include foreclosing on collateral, or pressing for bankruptcy or liquidation of the firm. The existence of creditors' rights provides incentives for managers to maximize the financial performance of the firm, resulting in a convergence of the interests of creditors and shareholders.

The banks are the major creditors of the corporate sector, as indicated by the high ratio of credits to GDP—almost 67 percent in 1997. The banks are also known to hold a very large amount of non-performing loans—the stock of classified credits amounts to one-third of total credits or the equivalent of 22 percent of GDP. However, the problem of bad loans has remained unsolved for many years, suggesting that banks have not been assertive towards their debtors.

There are three major reasons for the banks' lack of assertiveness towards their bad debtors. The first is related to the Government's initial policies for the banking sector. The major banks remained under State control without being subject to any clear privatization strategy and without receiving any signals to be assertive in debt collection. On the contrary, the political environment in which State banks operate resulted in passive attitudes in the handling of bad debtors. In addition, several classified loans were transferred from these State banks to another State bank (Consolidation Bank), which also operated passively—collecting whatever interest income could be collected, but without pressing debtors for restructuring or outsourcing debt collection.

Second, the capital position of the State banks probably did not allow them to adopt an assertive attitude, even if they had received clear signals from their shareholders to do so. Although these banks have constituted provisions on their classified loans, a faster build-up of provisions has been prevented by inadequate tax rules (which limit severely the amount of provisions that can be deducted from taxable income), and there are serious doubts as to whether current provisions are sufficient to restore capital adequacy ratios to adequate levels. When levels of provisions are not adequate, banks will hesitate to enter bankruptcy procedures and write down their loans, as these actions could reveal their weak capital position.

Third, banks have not been more assertive towards bad debtors and played a more active role in enterprise restructuring because of the weak support for creditor rights in the Czech legal system. Banks find it very difficult to foreclose on collateral, bankruptcy rules and procedures are still cumbersome, and the judges and courts are not equipped to handle more than a handful of cases at one time. There is a perception that engaging in bankruptcy procedures is a costly and lengthy exercise bringing ultimately limited benefits to the creditors.

Collateral and Foreclosure Rules

Movable property such as plant and equipment can be collateralized, but inventory, receivables, and property rights cannot. Foreclosure does not permit self-enforcement, and obtaining court approval for foreclosure involves long delays. Secured creditors are not permitted to withdraw their collateral from the estate of a bankrupt debtor. They are entitled only to be paid out of the realization proceeds once the administrator has sold the collateralized property. However, the process of administration is unreliable and secured creditors are not compensated for the inevitable delay in realization.

Creditors may take a mortgage over real estate. However, in order to enforce the mortgage following default, a creditor must first obtain a court order for foreclosure. The Municipal Court in Prague has held that a foreclosure will only be permitted if the debtor has consented to the forced sale. While it has been normal practice to include in the loan documents a prior authorization by the debtor if a default should occur, the Court has held that such a prior authorization is ineffective and is revocable by the debtor at any time. The registry office has followed this opinion and refuses to register a transfer of foreclosed real estate without the express consent of the debtor. As a result, few foreclosures occur.

The Bankruptcy Framework

Where the debtor is insolvent,[36] a creditor may file a bankruptcy petition with the court. However, bankruptcy proceedings are slow and there are few completed bankruptcies relative to the size of the economy. Between 1992 and 1996, 7,371 bankruptcy petitions were filed in respect of insolvent companies. During the same period, bankruptcies were completed in respect of 1,442 firms).[37]

The bankruptcy process is started by the filing of a bankruptcy petition, but the court has the discretion as to whether or not to make a bankruptcy order based on the petition. The Bankruptcy Act does not prescribe clear guidelines, opening room for the court to consider any objections raised by the debtor. Not surprisingly, it is common for a delay of up to one year to occur before the bankruptcy

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36 From April 1998, the definition of insolvency has been expanded, now including companies unable to pay their debts in time.

37 There are reports of instances where banks which had written-off loans were denied a bankruptcy order on the grounds that the debt was no longer due as a consequence of the write-off. The tax system may also have contributed by treating a debt write-down for the purposes of a composition or work-out as giving rise to a taxable receipt by the debtor, while simultaneously denying the creditor a deduction for the amount of the written-off debt.

order is made. During that period, there is no moratorium on creditor claims[38] and the debtor continues to manage its business.

The bankruptcy order will appoint an administrator of the debtor's property. The responsibility of the administrator is akin to that of a bankruptcy trustee. He will take over control of the debtor's property, collect the assets, and convert them into cash. The position of bankruptcy trustee in market economies is an important and responsible function, normally performed by representatives of major accounting firms, though specialist firms are also common. These practitioners develop expertise in the management of businesses and build their reputation by maximizing the recoveries for the creditors. They are well-remunerated and the costs of their services are paid for out of the realizations of the debtor's assets.

In the Czech Republic, the only persons permitted to be appointed as administrators are those selected from a list maintained by the court. The creditors have little influence over the selection of the administrator. There appears to be no licensing procedure for administrators, nor any specified criteria for their appointment. Also, the administrator is remunerated by a fixed and regular fee, rather than an amount proportional to the recovery. There is widespread criticism of the performance of administrators, who are regarded as generally under-skilled for the task of overseeing large and complex bankruptcies. Finally, because the fee of the administrator is unrelated to the administrator's performance, there is little incentive to maximize recoveries or to act quickly.[39]

Common complaints are that there are too few judges available with expertise in bankruptcy, and that the processing of these cases is delayed by the overall backlog in the court system. From April 1, 1998, the law has been changed to require the directors of a company that has failed to pay any liability to file a bankruptcy petition. If the directors fail to do so, they may be personally liable for any losses suffered by creditors. The introduction of this automatic trigger for bankruptcy may lead to a significant upsurge in bankruptcy filings and speed up enterprise restructuring. At the same time, this measure may also clog the court system, as nothing has been done to build up the capacity of the courts to deal with a wave of bankruptcy filings.

Overall Assessment

Although the internal mechanisms of governance have been considerably improved since 1996, there is still scope for further improvements. Minority shareholders do not receive sufficient protection, disclosure rules are not enforced, and corporate controllers and overseeing bodies are not fully accountable for damage that they cause to other shareholders or creditors. It provides incentives for controllers to involve in activities that are undesirable from the point of view of the minority shareholder or the lender, including fraudulent behaviour, "sweetheart" deals, and borrowing to invest in risky projects, perhaps without any intention to ever repay the loans.

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38 A six-month moratorium may be declared by the court once the bankruptcy order has been made, providing an opportunity for the debtor to negotiate a compromise with its creditors. If the debtor is able to reach agreement with a majority of its creditors, the debtor may ask the court to cancel the bankruptcy proceedings. The composition must offer a minimum of one-third of the outstanding claims. If the composition is fulfilled, the remainder of the debts are canceled.

39 From September 1998, administrators will be required to provide a final report to the court within 18 months of their appointment. This requirement may encourage administrators to move quickly, though there is no sanction for failure to comply with the time limit.

Holding companies constitute a special challenge, as they are still a collective investment vehicle, but have escaped the more stringent regulatory framework that applies to these institutions. Locked-in minority shareholders have few rights and almost no exit options. Because these holding companies control a significant volume of assets, there is a disproportionate risk of continued management expropriation, with resultant losses to minority shareholders and an adverse impact on the credibility of the capital markets.

There is also wide scope to strengthen the external mechanisms of governance, in particular to strengthen the role of creditors. Although one State bank was privatized in early 1998, the three largest commercial banks remain State-owned and have not been assertive towards their bad debtors. The Czech National Bank has been pressing the banks to increase the level of provisions, but tax rules have prevented a faster provision build-up. The rules on collateral and foreclosure and the bankruptcy framework remain cumbersome. Finally, the Consolidation Bank has received a large amount of classified loans from the other banks but has contributed little to the restructuring of its bad debtors.

Finally, enforcement capacity needs to be built up. Although the introduction of a Securities Commission is a very important step towards stronger enforcement capacity, the Commission still has limited financial and regulatory independence and needs to implement a well-articulated training and institutional development program. Moreover, enforcement of the legal framework does not depend on the Commission alone, also involving the police and the court system. Allegations of fraud within companies are investigated by the police, but there have been almost no prosecutions, and the court system is poorly equipped to deal with commercial disputes and bankruptcy cases.[40]

Policy Recommendations

Recommendations for Improvements in Internal Governance

Privatizing Enterprises Still Controlled by the State. The coexistence of government as owner and regulator almost always creates conflicts of interest, and unnecessarily politicizes simple business and management issues. Wherever utilities have been fully privatized under competitive regulatory regimes, economic gains have been very large. Full privatization will also force the recognition of past losses and eliminate room for decisions that cannot be justified economically (e.g., the huge costs of nuclear power plants, compared to other power generation alternatives). Comprehensive regulatory reforms should be undertaken as quickly as possible, opening the ground for full privatization of these utilities.

Strengthening Further Minority Shareholder Protection by:

- Increasing the opportunities for "voice" by minority shareholders by increasing the ease with which a minority of shareholders can call a shareholders' meeting and propose resolutions or question management. This could be achieved by reducing the threshold for shareholders to call a general meeting from 10 percent of the share capital to a lower percentage, such as 5 percent (as in Germany and Austria), and to a still lower percentage (perhaps 1 percent) for the largest companies (say, with more than 100,000 shareholders).

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40 Mejstrik (1998) arrives at very similar conclusions in an independent assessment of the quality of corporate governance in the Czech Republic.

- Enable any shareholder to have access to other shareholders of the company, by releasing the shareholder list upon request and payment of the reasonable costs of doing so. If this measure violates shareholder privacy, policy-makers should explore legal ways to request the shareholders' permission to reveal their identity to other shareholders or outsiders. This could be done through the board of directors or the registrar (SCP). In this way, dissenting shareholders will be able to solicit support from fellow shareholders. It should be noted that access to shareholder data is also essential to the launching of a hostile takeover bid or the organization of a proxy battle.

- Requiring that any general meeting must, to be effective, include the participation of not only large shareholders but also a proportion of the total number of shareholders. The quorum for a shareholders' meeting would be a combination of both a minimum percentage of nominal capital and the total number of shareholders, such as 25 percent of the voting shares and 10 percent of the number of shareholders, with a lower percentage of attending shareholders for the largest companies. Although these measures could in principle imply very large and impractical meetings, this has not been a difficulty elsewhere, especially when there are adequate arrangements for proxy voting.

- Allowing cumulative voting to strengthen the influence of small shareholders in the selection of members of the supervisory board. Cumulative voting would allow minority shareholders to leverage their voting rights by casting all their votes for one of a slate of candidates, and ensure representation in the board, rather than spreading them over for several candidates in several positions. Ensuring a proper weighting of shareholders interests in the supervisory board may also require that it contains more than the minimum of three members.

- Requiring a buy-out of minority shareholders once a single shareholder has acquired a substantial interest. Currently, the threshold for a mandatory buy-out is the acquisition of 50 percent of the shares of the company. The normal standard for most OECD countries is 25-30 percent, and a limit within this range could be adopted. Once that limit is crossed, the major shareholder would be required to make an offer to the remaining shareholders to buy their shares at the assessed market value, or on the terms presented in the draft EU 13th Company Directive. Failure to make such an offer would preclude the major shareholder from voting any shares acquired in excess of the limit. The single lower threshold for the mandatory buy-out of minorities will bring Czech law into line with current practices in other EU countries by providing an exit option for minority shareholders at the point at which effective control of the company passes to a single investor or group of investors.

- Requiring prior shareholder approval of "vulnerable" transactions such as those relating to the purchase or disposal of substantial assets. For example, the sale or purchase of assets representing 10 percent or more of the book value of the company assets would require the prior approval of a general meeting of shareholders. This requirement could be introduced by a regulation and implemented through listing requirements and amendment to the articles of association of the issuers.

- Encouraging proxy contests while, at the same time, regulating disclosure by organizers of proxy contests. Private custodians should be encouraged to obtain proxy voting rights for their customers

through power of attorney. Custodians should be required to solicit specific instructions from their customers and should vote only on instructions or by default.[41]

Clarifying Further the Duties of Directors to the Company. There are a number of "bright-line" rules designed to ensure that directors are aware of their obligations. These include: a duty to act with diligence and in what the director believes to be the best interests of the company; a duty to disclose to other directors and shareholders any potential conflicts of interest and not to vote on those transactions; and a duty to ensure that the business of the company is not carried on in such a way as to create a substantial risk of loss to creditors. These duties should be enforceable by the company, but if the company fails to do so, by any shareholder.

Improving Disclosure and the Quality of Information. Although the current legislation already requires extensive disclosure of information (including the obligation to disclose accounts on a consolidated basis), the rules are not consistently enforced. As a first step, the regulators must clarify the deadlines for disclosure and sanctions applying to enterprises which fail to disclose. The existing Laws allow the Government to introduce such improvements through a Decree. In addition, there must be a much greater effort at enforcement from the side of the new Securities Commission. Companies that choose not to comply with the disclosure requirements would be forced to go private by having the large shareholder buy out dissenting shareholders.

Current technical means make it possible to radically improve the access to information and significantly decrease the cost at which shareholders, potential investors, creditors and supervisors can acquire information. All publicly traded companies should be required to publish their announcements of general meetings, accounting information, and their annual reports on the Internet. It would significantly decrease the cost of monitoring by shareholders and supervisors and improve the protection of minority shareholders.

The Czech accounting profession has made significant strides in recent years and the market is now open to entry by the affiliates of international accounting firms. This opens room for the Government to consider transferring the responsibility for setting accounting and auditing standards and overseeing the professional activities of accountants and auditors to independent and self-regulating bodies set up by the professions themselves.[42] However, in the case of companies subject to the oversight of the Securities Commission, the Commission should retain the authority to impose supplemental reporting requirements consistent with the core requirements applicable to all companies.

Since the auditor's report is provided primarily for the benefit of shareholders, the removal of an external auditor should not be permitted except with the prior approval of the shareholders voting at a general meeting. To ensure that the shareholders are able to satisfy themselves that the removal is

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41 The practice in the Czech Republic is for proxies to be notarised where the articles of association require it. Proxy arrangements could in principle become safer if notarisation were mandatory and verified before General Assembly Meetings. However, that could also deter minority shareholder participation in a fundamental way, because notarisation is troublesome and costly, and because the Commercial Code allows very little time for notice of meetings. Indeed, ensuring greater shareholder participation is so important as to justify relaxing further notarisation requirements.

42 In March 1998, Germany followed the Anglo-American practice by relinquishing government control of accounting standards to a private standards committee controlled by the accounting profession.

justifiable, the auditor should be entitled as a matter of right to attend the shareholders meeting and to speak before the vote on removal is taken.

Supervisory boards of publicly tradable companies could be required to establish an audit committee. The audit committee would oversee the internal audit function and would be required to meet periodically with the external auditors, to review the annual audit report, and to propose to the general meeting the appointment or removal of the external auditors. Finally, external auditors should owe a duty of care to the company and to shareholders and should be able to be sued for negligence in the performance of their duties.

Using Employee Stock Ownership Plans to Buy Back Illiquid Shares. In addition to recommendations for strengthening the rights of minority shareholders and to facilitate takeovers, programs could be implemented to get more of the minority shares into the hands of people who know the enterprise and can improve its performance, and who are in a unique position to monitor the controlling shareholder, namely the employees. Programs fostering employee share ownership would also help address the illiquidity of the shares of medium and small companies--a problem that will become even more acute as the investment funds move towards an open-ended status and need to reduce their portfolio holdings in these companies.

The task is to devise a program that would encourage these firms to buy back their illiquid shares from divesting funds and non-employee small shareholders. This measure would in effect take the firm private, and remove from the market a large number of firms that do not fit the profile of a publicly tradable company. The main incentive would be that as the shares were paid for, the managers and workers in the firm would acquire the ownership of the shares as in the employee stock ownership plans (ESOPs) in the US and the UK.[43]

The essential feature in these ESOP/leasing models is that the managers and workers in the firm use the earning power of the firm to buy the shares over a period of many years. Shares are initially purchased from previous owners (e.g., the state or, in the Czech context, divesting non-state shareholders) in return for a debt or quasi-debt instrument issued by the firm. Then the shares are held in a trust arrangement and the employees only get the ownership of the shares as those debts are paid off. ESOPs serve to align employee interests more with other shareholder interests and to strengthen the employees' incentives to generate net earnings to pay off the ESOP debt instruments (in addition to their usual incentives related only to wages).

Addressing the Problem of Holding Companies. All the measures designed to enhance minority shareholder rights and improve transparency described above would also benefit the minority shareholders of holding companies, as these companies remain public companies immediately after the conversion (the decision to become a privately-held company is a separate decision). However, holding companies are not ordinary public companies, and their minority shareholders were placed in a difficult situation against their will. Therefore, additional measures to deal with these companies are justified. One possible policy response is a requirement that any company with more than a minimum number of shareholders (perhaps at the level of 100 shareholders who are not financially connected to one another), and with a substantial proportion of its assets invested in publicly tradable securities should provide to its shareholders a comparable level of disclosure to that required for investment funds. The

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[43] Models for similar transactions have been developed and successfully applied in Poland and Hungary. See Jarosz (1996), Uvalic and Vaughan-Whitehead (1997), and Ellerman (1993).

holding companies would in particular disclose their NAV, portfolio composition, material transactions with related parties and guarantees, options and other transactions capable of materially impacting the financial condition of the company.

A more radical step would be new legislation applying some or all of the provisions of the new Investment Companies and Investment Funds Act to financial holdings. This would include the requirement to limit discounts from net asset value. Since the Act would apply to all financial holdings it would not be regarded as retroactive legislation.

Addressing the Problem of Unit Trusts. For investment funds that take the form of a unit trust, the absence of voting rights is an anomaly. In most mature capital markets, unit trusts used as investment vehicles are required to provide similar corporate governance mechanisms to the corporate form. In particular, investors are able to convene meetings and remove the management company in the same manner as the shareholders of a company can remove a director and appoint a replacement. It is recommended that Czech law be revised so that unit trust funds have the same level of investor protection.

Management contracts should not be entrenched and instead should be terminable at any time by a suitable voting majority of investors in the fund regardless of the fund legal form. For example, in the United States, an investment management contract may not exceed a two-year term unless continuation is approved annually by a majority vote of the unitholders.

Strengthening Enforcement Capacity. Regardless of changes in the legal rights of creditors and shareholders, the enforcement of those rights is a crucial determinant of the reliability of corporate governance mechanisms. The Commission would need to develop and implement an institutional development program including substantial training to develop the skills of its staff. Further improvements to the independence and powers of the Securities Commission would be desirable. Judges and court officials also need to receive training and resources to be to handle commercial disputes more efficiently and speedily.

Recommendations for Improvements in External Governance

Removing Remaining Obstacles to Take-overs. As noted above, prospective investors should be entitled to obtain a full copy of the list of all shareholders of the company, upon request and payment of the reasonable costs of doing so. Access to this critical information would by itself enhance the threat of take-overs and contribute to improving the discipline of enterprise management and large shareholders.

Enhancing the Banks' Capacity to Handle Problem Debtors. The Government has announced that it will privatize all State commercial banks during 1998 and 1999. Privatization of these banks should proceed as fast as possible, through sales to strategic investors. Engaging reputed strategic investors in bank privatization will prove fundamental, as it will provide the independence, resources, and skills that these banks need to select creditworthy borrowers, monitor enterprises, and contribute to further enterprise restructuring. The authorities may also consider reviewing tax rules to allow a faster build up of provisions already in the pre-privatization stage.

The Consolidation Bank should be allowed to auction its classified loans, or outsource collection and restructuring in exchange for collection fee. These measures would greatly contribute to the restructuring of the enterprises that have had their debts transferred to this institution.

Streamlining the Bankruptcy Process.

- The discretion of the court to decide whether or not to grant a bankruptcy petition should be reduced. Demonstration by the creditor that it has made demand on the debtor for payment and the debtor has failed to do so within a reasonable time should satisfy the court, and the bankruptcy order should be made.

- The function of the administrator could be enhanced by allowing any person or persons licensed to practice law or accountancy in the Czech Republic to be eligible for appointment. A petitioning creditor could propose an administrator when filing its petition and the court should not reject that selection unless it has reasons to do so. If the debtor is the petitioner, the court could appoint any person nominated by a meeting of creditors.

- The fee structure of the administrator should be reviewed and performance-based remuneration should be allowed.

- Debtors suffering from liquidity difficulties should be able to seek reorganization under court protection. The Bankruptcy and Composition Act does not provide for debtor or creditor-led reorganizations. The law allows only compositions, either voluntary or involuntary. The composition remedy has several weaknesses which make it unattractive to both creditors and debtors. An involuntary composition can only be initiated once a bankruptcy order has been made. It does not therefore encourage a debtor facing liquidity problems to seek a pre-emptive solution with its creditors.

- While a voluntary composition proceeding can be started at any time, only the debtor can initiate the process. Creditors are precluded from doing so. Both involuntary and voluntary compositions require that the debtor satisfy the court that a minimum proportion of liabilities will be able to be repaid. This is an unnecessarily protective measure that will deter debtors from seeking a work-out solution with substantial upside for the creditors but with a downside risk of low returns if the business cannot be successfully revived. This restriction would be done away with in a reorganization mechanism, leaving debtors and creditors free to develop any solution they think best preserves their interests. A reorganization option would also recognize the opportunity for debtors and creditors to agree on a swap of debt for equity in a restructured firm, with consequent incentives for creative restructuring solutions.

- Coupled with reforms to the laws is the need for reforms of the courts to improve their capacity to efficiently handle bankruptcy work. Consideration could be given to the creation of specialist bankruptcy courts to handle this class of business. Training programs for bankruptcy judges and court officials would complement such an institutional reform.

CHAPTER V: PRIVATE PENSION FUNDS

Introduction

Like most European countries, the public pension system of the Czech Republic operates on a pay-as-you-go (PAYG) basis and faces increasing financial pressures, despite charging very high contribution rates (26 percent of gross wages). One of the main reasons for this situation is the progressive demographic ageing, although evasion, lax use of disability pensions, and early retirement provisions also are contributing factors. The Czech authorities took some measures in 1993 to contain the expenditures of the pension system, including the increase of the retirement age and the reduction of some benefits. Despite these measures, the system remains actuarially unbalanced, and further reductions in the benefits of future retirees look inevitable. Various studies point to the need to implement a more systemic reform and introduce a more diversified pension system, in order to avoid a drastic fall of replacement ratios, reduce long-run risks, and promote economic performance.[44]

One important step towards a more diversified and balanced pension system was taken in 1994, when the Czech authorities passed Law 42/94 that authorized the creation of voluntary supplementary pension funds with a state contribution (SPFs).[45] Both employers and authorized financial institutions may establish open funds, although employer-sponsored funds also have the option to operate as closed funds. At the end of 1997, there were 38 pension funds in operation, providing services to 1.6 million contributors, or the equivalent of 35 percent of the labor force. During the same year, the average contribution rate amounted to 3 percent of the average wage, and the assets of the pension funds amounted to 1.3 percent of GDP.

Although the total assets managed by private pension funds are still small relative to the assets of other financial institutions (such as investment funds and insurance companies), a large number of Czech citizens has already entrusted their savings to these institutions. Moreover, the assets of the pension funds are likely to grow in the future, as Czech citizens realize that the demographic pressures will sooner or later imply decreasing benefits from the public PAYG system. There is, therefore, strong justification for examining the structure and performance of the new private pension system, and ensuring that the system will be able to deliver the expected benefits. Assessing the robustness of the new private system is even more important considering that the voluntary system may form the basis for a future mandatory second pillar, a strategy that was adopted by a number of Western European countries, such as Switzerland, the Netherlands, Denmark, and Sweden, as well as Hungary in the case of Eastern Europe.[46]

This chapter provides an assessment of the Czech pension fund sector, and identifies the measures that would contribute to the sector's stability and robustness. The chapter is structured as follows. The second section discusses the regulatory framework of the voluntary pension funds. This is followed by

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44 See, e.g., the study conducted by CSOB (1997) for the Ministry of Labor and Social Affairs.

45 Hungary also introduced voluntary pension funds in 1994, three years before its 1997 systemic reform. See Vittas (1996) for an analysis of the Hungarian voluntary private pension funds.

46 The British pension system also has a mandatory second pillar, as millions of workers exercised their option to divert part of their PAYG contributions to privately managed plans (Whitehouse (1997). The Irish Government also considers introducing a mandatory second pillar if private coverage does not increase significantly from the present 50 percent of the labor force (The Pensions Board (1998)).

an analysis of the structure and performance of the sector. The fourth and last section makes an overall assessment of the sector and provides policy recommendations.

Regulatory Framework

Although the current regulatory framework for private pension funds has some positive aspects, it also suffers from serious gaps and inconsistencies. The main gaps relate to the absence of clear valuation and accounting rules and the inadequacy of information disclosure requirements, while inconsistencies arise with regard to the treatment of the balances of participants and their ability to switch their accounts from one pension fund to another. Many of these problems are related to the idiosyncratic mature of the scheme which, as discussed below, is based on endowment insurance rather than mutual fund principles.

Licensing Criteria

The establishment and operations of SPFs are governed by Law 42/94. This stipulates that SPFs must be set up as joint stock companies governed by the Commercial Code. The minimum basic capital is 20 million CZK[47] (0.6 million USD) and must be fully paid before applying for a license. The license for the establishment of a pension fund is granted by the Ministry of Finance (MoF), but the application also requires the approval of the Ministry of Labor and Social Affairs. Authorization criteria include, in addition to the minimum capital, adequate business plans, "fit and proper" tests for management and supervisory board directors, and nomination of an authorized bank for the custody of pension fund assets. No restrictions are placed on founders and shareholders of pension funds as long as they meet the authorization criteria and obtain a license.[48]

Management and supervisory boards must have at least 5 members, but there is no minimum limit on the number of shareholders. Members of the management and supervisory boards may not be members of the bodies of another pension fund, an insurance company, or an investment fund. The same restriction also applies for persons who are involved in securities trading or members of the custodian bank. Employees of the SPF may not be members of its supervisory board to ensure the latter's independence. These and other regulations (such as the prohibition of self-dealing by SPF-employees) are intended to limit fraud and conflicts of interest.

Pension funds must have a Statute and a Pension Plan, both of which must be made available to all participants. The Statute defines the activities of the pension fund, the objectives of its investment policy, the allocation of profits, the procedures for amending its rules and by-laws, and the disclosure of its activities. The Pension Plan sets out the rules for the payment of contributions and benefits. The Pension Plan also states the conditions for the suspension or cessation of payments, and the transfer of accumulated balances into other pension funds.

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47 The Ministry is proposing to raise the minimum capital requirement to 50 million CZK (see section 4).

48 Under proposed amendments to the Pension Fund Law, a bank will not be allowed to own shares in a pension fund for which it acts as custodian. In addition, health insurance companies will not be allowed to own pension funds.

The Basic Mode of Operations

The Czech pension funds do not operate like mutual funds (as in the case of Latin American countries or that of most defined contribution plans in the United States and other advanced countries), but rather like insurance companies offering participating endowment policies.[49] Individuals who decide to participate in the plan have no voting rights, which are held by the shareholders of the pension funds. Participants are clients of the pension funds in much the same way as policyholders of joint-stock life insurance companies. The flows of contributions are invested and the profits (investment income minus costs) are distributed to participants and shareholders. The distribution of profits to participants is subject to minimum legal requirements, but the law does not require a legal segregation of the balances of participants from the assets of the pension fund.

The voluntary pension funds are set up as defined-contribution plans--the contributions are defined and the final balance before retirement depends on the yield of the pension fund's portfolio. At retirement, the pension fund converts the balance into an annuity based on the current annuity rate. The pension funds are authorized to offer old age pensions as well as ordinary annuities to people below 50. As in other countries, they are also authorized to offer disability and survivor pensions, which operate on a defined benefit basis.[50] Although pension funds are authorized to offer annuities, the law also allows the use of lump-sum payments.

Participants over 50 years of age can terminate their contracts and receive a lump sum or an annuity at any time after they meet the minimum term requirement imposed by their pension fund.[51] Participants below the age of 50 can terminate their contracts and withdraw their balances (or buy an annuity) after 15 years or when they reach 50 and satisfy the minimum term required by their fund. The law stipulates that no pension fund can impose a minimum term of more than 60 months, but this minimum is not commonly adopted. In fact, several pension funds require minimum terms of only 36, 24 and even 12 months.[52]

The law allows workers and other participants (retired people, students and housewives) to join only one pension fund. The rule of one account in one pension fund per participant follows the pattern established in Chile and other reforming countries, and is motivated by the need to increase the transparency of the system. However, an additional factor in the Czech Republic is the need to avoid the double payment of the State contribution to the same person (as described in more detail below). Participants can transfer their accounts to another fund once they satisfy the minimum term required by the fund's statutes. Those who transfer or terminate their accounts can withdraw their total outstanding balances, including the state contributions and credited investment income. But because investment income is declared once a year, participants transferring their accounts to another fund receive their share of the annual profit when the latter is declared and not at the time of transfer.

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49 Box 5.1 provides a brief discussion of differences and similarities between the two models as regards their functioning during the accumulation period. Both models may offer the same types of benefits in terms of old age, survivor, and disability pensions.

50 See World Bank, (1994) for a discussion of defined benefit versus defined contribution plans.

51 The proposed amendments to the law include raising the age limit to 55 for new participants.

52 Under the proposed amendments, the minimum term requirement will be 36 months, while the maximum term will remain at 60 months.

Box 5.1: The Participating Endowment Insurance and Mutual Fund Models Compared

Legal form and voting rights. In the mutual fund model, participants may or may not have voting rights depending on the legal form of the mutual fund. They have one vote per share if the fund is organized in corporate form or if it is organized in trust form and the trust agreement (deed) provides for voting rights. They have no voting rights otherwise. Participants in the Chilean and Argentine pension funds have no voting rights in the pension fund or the management company, but in Mexico they have in both.

In the endowment insurance model, participants may have voting rights on the basis of one vote per participant if the pension fund is established as a mutual society but no voting rights if it is established as a joint stock company. In the Czech Republic, participants have no voting rights.

Legal segregation of assets. In the mutual fund model, there is a legal segregation of the assets that belong to the participants in the pension fund from the assets of the founders and managers of the fund. If the latter become insolvent, the assets of the participants cannot be attached and used to pay off the debts of the founders or managers. In the participating endowment insurance model, there is no similar legal segregation of assets, although the negative effect of this may be mitigated by limiting the operations of the pension fund.

Valuation, Transparency and Volatility. In the mutual fund model, assets are marked to market, participants own units or quotas in the fund, and returns are based on both realized and unrealized capital gains. When participants transfer their accounts they take with them the full value of their balances which are based on the latest valuation of assets. Asset valuation is usually effected daily or weekly.

In the participating endowment insurance model, the contributions of participants are invested in a pool of assets but the assets are valued once or twice a year and the rate of return is calculated and credited once a year. It may be calculated with or without taking into account unrealized capital gains or income accrued but not yet received. Participants who transfer their accounts take the contributions and past returns already credited to them but may have to wait until the middle of the following year to receive their share of the current year's profit.

In both models, fund managers may subsidize or lower the net rate of return. In the mutual fund model, although the investment return is credited to participants, the operating fee may be lower or higher than costs. However, in the mutual fund model changes in operating fees occur in a transparent way at the beginning of a period. In the endowment insurance model, the net rate of return is subsidized or lowered by the managers charging less or more than full operating costs. Moreover, the actions of the managers are less transparent and become known at the end of the period on an ex post basis.

These structural differences can be mitigated by appropriate regulations (for instance, requiring the endowment insurance model to use market values), but the basic difference that will remain is that returns are more stable and predictable in the endowment insurance than the mutual fund model. The price for lower volatility may, however, be less transparency, the creation of large hidden reserves, and the ability of the endowment insurance model to lower the net return in an ad hoc and ex post fashion.

Despite its exposure to price volatility, the mutual fund model is receiving growing acceptance for three main reasons: first, transparency and market valuation are preferred to subjective valuations; short term volatility is not important for retirement savings; and innovations in investment and annuity products promise to mitigate the adverse effects of excessive volatility.

The State Contribution

Participation in the supplementary pension insurance system is voluntary, but the State makes a contribution in order to encourage participation among workers. The State adds up to 40 percent for those contributing 100 crowns, declining to 24 percent for those contributing 500 crowns, up to a maximum State contribution of 120 crowns (Table 5.1). These amounts may be changed by government decision, but they are not linked to inflation. The State contribution is raised by 25 percent during the first two years of participation in the system (Jelinek and Schneider (1997)).

Table 5.1: State Contribution to the Voluntary Pension System

Participant Contribution (CZK)	State Contribution (CZK)	Range (%)
100-199	40 + 32% of amount above 100	40 to 36
200-299	72 + 24% of amount above 200	36 to 32
300-399	96 + 16% of amount above 300	32 to 28
400-499	112 + 8% of amount above 400	28 to 24

Source: Ministry of Finance

The tax treatment is complicated. Own contributions and the State contribution are tax free but employer (and any other third-party) contributions are subject to a 15 percent tax. Tax payments on interest and dividend income are deferred until pensions are drawn, but a 25 percent tax is imposed on capital gains on securities and a 35 percent tax (the normal corporate rate) on real estate capital gains, both at the level of the fund (Jelinek and Schneider, (1997)). Benefits are presumably taxed, although it is not clear that lump sum withdrawals are subject to full taxation.

The State contribution favors low-income workers and thus avoids the regressive effect of tax exemptions. However, the State contribution does not depend on workers contributing a minimum proportion (say 10 percent) of their monthly income. Thus, high-income workers may only subscribe for a contribution of 500 crowns to receive the maximum state contribution. This tends to limit average contributions and the total size of the funds.

Pension funds submit to the MoF their lists of participants and their contributions one month after the end of each quarter. The State pays its quarterly contribution in the following month. The MoF checks the lists for possible duplication and delays the payment of the State contribution to participants who are included in more than one list. It requires the pension funds involved to sort out any problems and makes the payment when the issue is resolved. Although pension fund operations are computerized, the checking process in cases of duplication is manual, time consuming, and costly. To minimize the occurrence of such duplications, some pension fund managers are suggesting that the law should be amended to require that transfers should only take place at the beginning of each quarter.

Major Regulatory Issues

Investment Policies. SPFs are generally required to invest in a "prudent manner" and to ensure a "steady, dependable yield" on their investments. SPFs may invest in State bonds, bonds issued by banks, publicly tradable corporate bonds, publicly marketable shares and participation certificates, other movable property offering a safe guaranteed investment, and land and other immovable property.[53]

SPF investments are subject to a number of prudential limits. They may invest up to 10 percent of their assets in shares of a single company and up to 5 percent of their assets in one movable or immovable property. They may hold up to 20 percent of an equity issue (the same limits apply for investment funds). SPFs are not allowed to buy shares of other pension funds or to issue bonds. The equity held by pension funds is valued on the basis of the prices quoted on the public market on the day of the calculation, but there are no clear valuation guidelines in cases where no price is quoted for a particular equity on a particular day.

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53 No investments in foreign securities are currently permitted, although under the proposed amendments such investments in securities traded in OECD markets will be allowed subject to a 50 percent limit that covers domestic equities and foreign securities.

Accounting Rules, Operating Expenses and Distribution of Profits. The investment performance of pension funds following the endowment insurance model depends fundamentally on the annual rate of return which is declared at the end of the year. Therefore, it depends on clear guidelines on the treatment of operating expenses, revenues and profits. The Czech regulatory framework is unclear in this area, as it applies no restrictions on the types and levels of operating costs. These are left to be determined by competition in the market. The law does not specify the determination of gross revenues and profits either. In particular, there is no indication whether accrued but not received dividend and interests, as well as unrealized capital gains and losses should be included in the determination of revenues and profits. There is no indication of what expenses should or should not be deducted from revenues for arriving at the annual net profit either. It is highly likely that practice varies considerably across the funds.

The law is also silent on whether pension funds can or cannot subsidize the credited annual rate of return. The law only specifies that at least 5 percent of the annual profit must be allocated to the reserve fund, while at most 10 percent distributed to shareholders. The remainder must be used for the benefit of participants. The rate of return declared by many pension funds seems to exceed the achieved financial result, especially in 1995 and 1996, indicating that several funds have decided not to cover fully their start-up costs. This outcome may look desirable, as it benefits participants, but is achieved in an ex-post and non-transparent way.[54] In addition, the law also seems to provide room for excessive charges in the future, for instance by permitting excessive trading and churning of asset portfolios.

Accounting rules are also unclear with regard to the treatment of balances (contributions and credited returns) belonging to participants. Although participants are not shareholders of the pension funds, their balances are reported in the annual balance sheet in the same category as the basic capital and other own resources of the pension funds. Ideally, participant balances should be shown separately and should include the accumulated distribution of profits. Moreover, the rules do not specify when the annual investment return should be credited to participant balances. As pension funds have to disclose their financial results at the latest by the end of June of the following year, it is assumed that participants may have to wait until then before they receive their share of the distributed profit for the current year. It is also not clear if participants who transfer their accounts receive their share of the current year's profit.

Information Disclosure. SPFs are required to disclose their general investment policies and to publish semi-annual and annual results. Pension funds in existence for more than three years must also include a survey of their economic results for the past three years. They are further required to send at least once a year a statement to each participant showing the accumulated balances and investment income.[55]

The economic reports must also be submitted to the MoF and the depository bank. The MoF keeps records of all the pension funds which are available to the public, but the contents of these records is not specified, and the MoF only makes available a list of all funds with their mailing address

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54 Subsidization of net returns in the early stages of the reform, or the charging of large fees in later stages may also happen in countries adopting the mutual fund model, such as Chile and Argentina. However, this is done on an ex-ante and transparent basis. By contrast, the Czech approach allows pension funds to charge high operating costs on an ex-post basis and in a non-transparent fashion.

55 In countries that have recently reformed their pension systems, pension funds are frequently instructed to send their statements more frequently, say 3 or 4 times per year, in order to allow a more effective scrutiny of their operations and performance.

but without showing performance indicators. The present law creates obstacles for more disclosure of information, by stating that information concerning a pension fund may only be used with its approval.

Regulation of Benefits. As mentioned before, pension funds are allowed to offer lump-sums as well as annuities upon retirement. However, the law is deficient on the prudential and other regulatory requirements that pension funds must meet with regard to the offer of annuities. The funds are required to maintain separate accounts and reserves for their annuity business, but the law does not specify additional conditions, such as minimum size and obligatory re-insurance. Even small pension funds are allowed to offer annuities and they are not required to reinsure with large insurance companies or to employ certified actuaries. These regulatory deficiencies do not generate a serious problem at present because of the small number of annuities, but they have to be corrected to avoid serious problems in the future.

The Supervisory Framework

Pension funds and custodian banks are supervised by the MoF, which is empowered to demand all information and records necessary for performing the supervisory function, but is not allowed to disclose any information gathered during the supervisory process.[56] The MoF supervisors are empowered to impose fines, suspend directors, reduce the portion of the profit which may be distributed to shareholders, and withdraw the license of pension funds that are not in compliance with the law or their own statutes. Supervisors are specifically enjoined to ensure that no participant benefits from multiple state contributions. It seems that supervisors expend considerable time and resources on performing this task. Given the small number of qualified staff, this is likely to operate to the detriment of other supervisory functions.

Structure and Performance

Coverage and Contributions

Since the inception of the SPF system, 44 funds have been authorized. One fund (Rodinny) was put into liquidation in February 1997. The number of funds declined to 38 in 1997, following 2 pairwise mergers and 3 takeovers. More mergers took place during 1998. A threefold merger, that created the largest fund with over 400,000 participants, was announced in May 1998, while 2 additional small pension funds (Bankovni and Multi) had their license withdrawn in the same month. The number of funds fell to 30 during 1998 and is expected to decline further in the near future to 20 or even 15.

The number of contributors increased from 317 thousand in the last quarter of 1994 to 1.64 million in the fourth quarter of 1997 and 1.72 million in the third quarter of 1998 (Table 5.2). This is equivalent to 35 percent of the labor force, although contributors also include some pensioners, housewives and students. The proportion of covered workers is thus smaller, perhaps lower than 30%. The average own contribution initially amounted to 204 crowns per month, or approximately 3 percent of the average wage, with the State adding another 75 crowns per month, or 37 percent of the own contribution. The own contribution has been maintained at around 3 percent of the average wage, while the State contribution has declined relative to the own contribution, probably due to the termination of the 25 percent supplement that is paid during the first 2 years of participation in the system.

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[56] This restriction will be repealed by the proposed amendments to the law.

Table 5.2: Quarterly Evolution of Participants and Contributions, 1994-Q3/98

Quarter/ Year	Participants	Own Contributions (Monthly Average)	State Contributions (Monthly Average)	Monthly Average Wage	Own Contributions/ Wage	State Contribution/Own Contribution
	(000s)	(CZK)	(CZK)	(CZK)	(%)	(%)
Q4/1994	317.3	203.9	75.3	7394	2.8	37
Q4/1995	1290.1	262.6	93.1	8736	3.0	35
Q4/1996	1564.3	305.5	102.9	9654	3.0	34
Q4/1997	1637.6	333.0	97.4	10242	3.1	29
Q3/1998	1720.0	345.0	98.0	11482	3.0	28

Source: Ministry of Finance.

The size of the system can be estimated by the total cumulative contributions, which reached almost 20 billion crowns at the end of 1997, or the equivalent of 1.3 percent of GDP (Table 5.3). Unfortunately, no detailed data are available on investment income and on withdrawals to allow an accurate estimation of outstanding balances. However, total assets of pension funds that are members of the association of pension funds (APF) amounted to a similar order of magnitude--22 billion CZK at the end of 1997 and 26 billion CZK by September 1998.

Table 5.3: Evolution of Annual Contributions, 1994-1997

Year	Own Contributions (Yearly Flows)	State Contributions (Yearly Flows)	Total Contributions (Yearly Flows)	Own Contributions (Accumulated)	State Contributions (Accumulated)	Total Contributions (Accumulated)
	(mn CZK)	(mn CZK)	(mn CZK)			
1994	64.7	23.9	88.6	64.7	23.9	88.6
1995	3194.1	1122.3	4316.4	3258.8	1146.2	4405.0
1996	5331.8	1819.7	7151.5	8590.6	2965.9	11556.5
1997	6174.8	1871.2	8046.0	14765.4	4837.1	19602.5

Note: Accumulated balances without taking into account withdrawals and investment income.
Source: Ministry of Finance.

The Czech private pension system seems to have had a reasonably good start, as suggested by the initial rapid increase in the number of participants. However, the contribution of the current voluntary pillar in the provision of retirement income in the future may remain limited, due to low coverage and low contributions. First, the increase in the number of participants tapered off in 1997 and 1998, suggesting that it may not prove easy to expand the coverage ratio (workers as a share of the labor force) well beyond the current levels. Second, the coverage ratio is actually lower than 35 percent, considering that a significant number of participants are outside the labor force (pensioners and housewives). Third, the average age of the participants is relatively high, reflecting the fact that 10 percent of the participants are above the age of 65, and only 15 percent below the age of 35. Thus, a very large share of young workers remains uncovered, and these are precisely the workers who will experience the most pronounced fall in benefits from the public PAYG system. Finally, the average contribution has remained very low (3 percent of the average wage), limiting the growth of assets and the generation of future income.

Institutional Structure

Market concentration is high, with the 5 largest funds accounting for about 60 percent of the number of participants and client funds (Table 5.4). There was a decline in concentration between

1995 and 1997 (due primarily to the decline in the fortunes of Podnikatelsky Pension Fund), but concentration is expected to rebound strongly in 1998 as a result of several mergers that are likely to take place. The announced merger of Vojensky with Podnikatelsky and Union will create the largest pension fund with over 400,000 members, and will alone raise the market share of the largest five to 68 percent.

High concentration will have implications for the functioning of the capital markets, but this issue will not become important until the pension funds accumulate enough resources to enable them to be a critical force in the markets. When this happens, measures can be taken to authorize, or even require, pension funds to use external asset managers and to assign any voting rights they have to them. Similar problems will arise in all countries that promote pension reform. However, only in Chile, where pension funds already mobilize resources equivalent to 45 percent of GDP, is the issue raised with some urgency.

Table 5.4: Indicators of Market Concentration

	Share of Total Participants (in %)			Share of Total Client Funds (in %)		
	1995	1996	1997	1995	1996	1997
Largest 5	75.2	64.8	56.7	n.a.	68.1	61.4
Largest 15	94.7	93.1	92.5	n.a.	93.6	92.7

Source: Ministry of Finance

Asset Structure and Composition of Investments

The assets of pension funds are dominated by their portfolio investments, both long-term, such as bonds and equities, and short-term, such as bank deposits and bills (Table 5.5). There is a small amount of fixed assets and a declining component of other assets, presumably claims on founders and other sponsors. On the liability side, the balances that belong to participants (client funds) are the largest component, amounting to 81 percent of the total in 1997. Basic shareholder capital has fallen to 8 percent of assets. The item "other own funds" reflects profits and losses for the year, including those distributed to participants and those allocated to shareholders. Other liabilities were very high in 1996 because some funds obtained short-term loans that were invested in short term assets. These were repaid in 1997.

Table 5.5: Asset Structure of Pension Funds[1]

	1995		1996		1997		Q2/1998	
	(mn CZK)	%	(mn CZK)	%	(mn CZK)	%	(mn CZK)	%
Fixed Assets	195.7	3.1	295.4	1.3	576.1	2.7	611	2
Investments	4550.5	71.5	20021.1	88.0	19186.3	89.2	19870	86
Other Assets	1617.3	25.4	2426.2	10.7	1732.8	8.1	2712	11
Total Assets	6363.5	100.0	22742.7	100.0	21495.0	100.0	23193	100
Basic Capital	1299.0	20.4	1584.1	7.0	1746.1	8.1	1816	7
Client Funds[2]	4369.0	68.6	10776.9	47.4	17384.0	80.9	19300	83
Other Own Funds[3]	-129.2	-2.0	275.8	1.2	1541.2	7.2	1487	6
Other Liabilities	824.7	13.0	10105.9	44.4	823.7	3.8	590	2

Notes: 1/ Only members of the Association of Pension Funds (95 percent of the market).
2/ Covers what is reported as Capital Fund in annual balance sheets. It is not clear if distributed profits are included.
3/ Mostly includes cumulative profits.
Source: Association of Pension Funds.

Concern about the ability of private pension funds to invest their assets safely and profitably is usually one of the strongest arguments against systemic pension reform and against the promotion of funded pension plans, especially in developing and transitioning countries where neither capital markets nor prudent investment policies are well established. This concern has been heightened in those countries where investment privatization funds fueled by privatization vouchers have grown very fast but have also failed to meet the high expectations placed on them.

However, the experience of investment privatization funds is not relevant for the prospects of private pension funds in any country. In the first place, well designed private pension funds operate as long-term mutual funds. Their growth should be based on the principles of contractual saving and interest compounding. They should accumulate funds gradually and should not thus be faced with sudden calls for effective management of large volumes of assets. Secondly, private pension funds may initially invest in safe instruments, such as government bonds and bank deposits with solvent banks, and may diversify into corporate equities and bonds as their resources accumulate and as the markets for these instruments become better regulated. Private pension funds may also diversify into foreign securities where transparency and liquidity of the underlying financial instruments would not be a problem. Thirdly, private pension funds would normally be passive shareholders, investing in well performing companies with good prospects. They would not be expected to play an active direct part in corporate governance, although when they become sufficiently large they may encourage the development of stronger corporate governance structures.

This role is in sharp contrast to that of investment privatization funds. The latter were expected to be either actively involved in corporate restructuring or to adopt a passive stance but in companies that were in need of substantial restructuring and were operating in a regulatory vacuum. The opportunities for "tunnelling" were both very large and very tempting to the operators of investment privatization funds. Private pension funds start with very small assets and may initially incur significant operating losses. Although in a poorly regulated and unsupervised environment, some looting of private pension funds may occur, this is not generally the area where most of the action takes place. The experience of Latin American countries as well as Hungary where there have been no major failures of private pension funds and where no participants have lost their savings, provides support to this point of view.

In the Czech Republic, the prospects of private pension funds have been clouded by the unfortunate experience of most of investment privatization funds. There have been widespread concerns that some of the pension funds may also have been used as vehicles in the "tunnelling" process. There is no firm evidence to support or reject these concerns. Indeed, aggregate data indicates that corporate equities have never accounted for more than 17 percent of pension fund investments (Table 5.6). Pension funds generally appear to follow prudent policies, although there is also indication that some individual funds have unduly large proportions of equities in their investment portfolios.[57] Given the lack of liquidity and transparency of the equity markets, it would have been more appropriate to invest preponderantly in fixed income instruments, as most funds seem to have effectively done (Table 5.6). Some funds have generated poor financial results and very low credited returns. The lack of transparency in the sector may allow poorly performing funds to retain their clients and remain unchecked for long periods of time.

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[57] One small fund invested 65 percent of its portfolio in equities, while 5 other funds had between 30 and 50 percent in equities (APF 1998).

Table 5.6: Investment Profiles of Pension Funds (%)

Type of asset	1995	1996	1997	Q2/1998
State bonds	3	0	19	59
Bank bonds	12	41	17	21
Corporate bonds	33	31	17	17
Corporate equity	17	7	14	1
Term deposits	30	19	30	1
Other	5	2	3	1
Total	100	100	100	100

Source: Ministry of Finance and Association of Pension Funds.

Operating Costs

Detailed data on operating costs are not readily available. Estimates of operating expenses, which are questioned by the pension fund association, indicate that they amounted to 20 percent of client funds in 1995, but fell to an estimated 5 percent in 1997 (Table 5.7). By comparison, costs of mutual funds in the US amount to 0.3-2.5 percent of total assets, depending on the size and nature of the fund. The estimated decline in the operating cost ratio represents a remarkable improvement, but the ratio is still very high and needs to fall to less than one fourth of the current level. Moreover, operating costs in schemes that have the characteristics of endowment insurance policies can be subject to manipulation and arbitrary determination, especially if there are no clear regulations about their treatment. The data on individual funds may hide large differences in practice. In some cases, many of the costs may be covered by the founders and sponsors of pension funds and may not be debited to the fund accounts, while in other cases, costs may be inflated.

Table 5.7: Operating Expenses as a Share of Client Funds

	1995	1996	1997
Average of all funds	20.2	9.4	5.0[1]
Average of largest 5	n.a.	9.8	5.9
Maximum	n.a.	13.1	18.0
Minimum	n.a.	4.1	3.2

Notes: 1/ Estimates based on extrapolation from APF data.
Source: Ministry of Finance.

Financial Returns

The number of pension funds generating profits has increased since 1994, and the number of funds generating losses has declined accordingly (Table 5.8), although there are still wide differences in profitability across individual funds (Table 5.9). In 1996, the rates of return credited to client funds were in general higher than profit ratios, suggesting that most pension funds subsidized client returns from their own resources. It is not clear how any donations from founders are treated in the accounts of the pension funds and whether the pension funds will be able to recoup them from future profits. There also seem to be wide differences in rates of return credited on client funds, with four funds crediting a return lower than 8 percent in 1996, and two funds crediting a rate of return above 16 percent. In general, some smaller funds paid higher returns in an attempt to attract participants. In 1997, profit ratios generally improved but credited rates of return remained broadly stable.

Table 5.8: Financial Results of Pension Funds, 1994-Q2/98

Year	Funds	Profits	Funds	Losses	Overall Result
		(000s CZK)		(000s CZK)	(000s CZK)
1994	4	2	17	40	-38
1995	18	200	26	440	-240
1996	27	590	17	180	+410
1997 [1]	23	1190	4	15	+1175
Q2/1998	31	762	4	18	+744

Notes: 1/ Only APF members.
Sources: Ministry of Finance and Association of Pension Funds.

Table 5.9: Profit Ratios and Client Returns, 1996 and 1997

	1996		1997	
	Profits/Client Funds	Client Return	Profits/Client Funds	Client Return
Average of largest 15	6.1	9.3	8.3	9.5
Average of largest 5	8.1	9.4	9.9	9.6
Maximum	13.5	16.1	14.4	14.4
Minimum	-32.2	0	-6.6	6.3

Source: APF.

Despite the relatively low returns, which are often well below the rate of inflation, participants may receive a robust return on their own contributions. In all cases, they receive the state contribution, but in some cases they also receive a matching contribution from their employers. However, detailed data on how many participants benefit from employer contributions are not available.[58]

An examination of the full list of pension funds indicates that at least 5 of the largest 15 funds are operated by well-managed domestic or foreign entities, while another 3 of the large funds have the resources to improve their efficiency. Adding to this list, the Generali Pension Fund (which is currently small but has the potential to grow) and several pension funds operated by industrial concerns, provide a hard core of about 12 pension funds that have the potential to expand their operations and to form the basis of a compulsory second pillar, if a systemic pension reform were to be implemented. At the other end of the spectrum, there are at least 16 pension funds that have less than 20,000 participants and a limited amount of assets. Most of these pension funds are not audited by international auditing firms and do not use well capitalized banks as depositories. There is a need to upgrade the quality of these pension funds, even if they restrict their activities to the voluntary third pillar.

Overall Assessment and Policy Recommendations

Assessment

The voluntary SPFs suffer from a number of important weaknesses, although they also have some promising strengths. The first major weakness is that the institutions may fail to promote supplementary pensions, as they effectively offer short-term endowment insurance policies. The ability to terminate contracts and withdraw balances before reaching retirement age eliminates the contractual

58 A worker contributing 3 percent of salary will receive an additional 1 percent from the State. If the employer offers a 50 percent matching contribution, equivalent to 1.5 percent of salary, the participating worker will accumulate 5.5 percent. Contributions by the State and the employer represent a return of 80 percent on "own" contributions, even before taking into account any credited returns. Over time, the credited return will become far more important than matching contributions.

savings aspect that differentiates pension funds from other institutions such as mutual funds, and opens room for the channelling of withdrawals towards consumption. This also implies that a large public expenditure in the form of state contributions may fail to generate sufficient long-term savings for the provision of reasonable supplementary pensions.

The second major weakness is closely related to the first. Being effectively providers of short-term endowment insurance policies, the funds have a shorter time horizon than pension funds in the usual sense. Therefore, they may not become providers of long-term resources and will contribute less effectively to capital formation and resource allocation.

The third major weakness of the system is that participants are not required to save a minimum percentage of their earnings. High income workers may limit their contributions to the amount required to receive the full state subsidy. The average contribution rate is only 3 percent of average earnings, constraining the growth of the system.

The fourth major weakness is the lack of clear rules on accounting standards and information disclosure, and the absence of guidelines on publicity and advertising. As a result of these deficiencies, the reporting of participant balances and investment returns is very inadequate, the system is opaque, the public cannot make informed decisions, and could be even misled by biased and inappropriate marketing material.

As described above, the regulatory and supervisory framework also contain other deficiencies that allow room for inappropriate behavior and the survival of weaker institutions. The pension fund sector has many small funds that are not audited by international auditing firms and do not use well capitalized banks as depositories. There is a real risk of misappropriation of funds and imprudent investments, especially in view of the acknowledged weakness of the supervisory function. The latter appears to focus on ensuring that no participant receives multiple state contributions and to overlook the importance of prudent and transparent policies.

Despite these weaknesses the pension funds also have some promising strengths. The system has introduced the notion of contractual savings, and (partly due to the State contribution) has attracted a significant number of participants, including inactive people, low income people, and women. It is noteworthy that in countries that reformed their pension systems, such as Argentina and Chile, the share of women participating in the private funded scheme is less than 25 percent, while in the Czech Republic 54 percent of participants are women.[59]

The pension funds have already accumulated the equivalent to US$600 million, or 1.3 percent of GDP. This is higher than in the Hungarian voluntary pension scheme, which accumulated during the same period the equivalent to US$300 million or 0.6 percent of GDP. It is possible that the greater success of Czech funds in attracting participants is related to the State contribution. The Czech funds accumulated less resources than the Argentine funds during the same period of operation (8.8 billion USD or 2.8 percent of GDP). However, the difference can be easily explained by the higher contribution rate used for long-term capital accumulation in Argentina (7.5 percent) and the compulsory nature of the Argentine scheme.

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[59] Although the higher labor force participation rate of women in the Czech Republic may also partly explain this result.

An important and most promising strength is the growing presence of large international financial institutions, such as ING, Allianz, and Winterthur, and the successful involvement of a few large domestic institutions such as the KB and Vojensky pension funds. These institutions have laid the foundations in terms of computer systems, marketing, and asset management to have a big impact in the market in the years to come. Streamlining the operations of the pension funds of other big banks, insurance companies and industrial groups will add significantly to the list of promising institutions.

Proposed Amendments

The MoF prepared a perceptive analysis that highlights both the achievements and the failures of the current system (Ministry of Finance (1998a)), and the Government has already drafted various amendments to the Pension Fund Law that address several of the problems identified above. Enacting most of these amendments would seem essential in the short run, if the scheme is to continue to evolve in a positive and beneficial way.

The proposed amendments will, *inter alia*:

- Require a minimum term of 36 months for pension contracts (while still leaving the maximum term at 60 months). This will eliminate the use of very short terms as marketing gimmicks by competing pension funds, but does not address the essentially short-term nature of the whole scheme (see below).

- Increase the cut-off date for old age pensions to 55 from the current 50. All people younger than 40 would be required to save for 15 years before they are entitled to withdraw their balances either in a lump or in the form of an annuity, while those between 40 and 55 would be able to withdraw their funds when they reach 55.

- Raise the minimum capital of SPFs from 20 to 50 million CZK. It is expected that this measure will encourage mergers and the absorption of the smaller funds into larger entities.

- Prohibit a depository bank, as well as the owners of a depository bank, from owning shares in the pension fund for which it acts as custodian. This rule will force pension funds to hire an independent bank as depository. The proposed amendments will also prohibit health insurance companies from owning shares in a pension fund.

- Require official approval of any significant transfer of shares of pension funds. This will allow the authorities to vet new owners of pension funds after a license has been issued.

- Allow pension funds to invest in bonds and equities listed in approved foreign markets. The markets of most, if not all, OECD countries will be approved. However, a limit of 50 percent of the total investments of a pension fund will be placed on the combined holdings of domestic equities and foreign securities (bonds and equities).

- Impose a fiduciary duty on pension fund managers, who will be expected to act in the best interests of participants. This is a very important change, as it is the first time that fiduciary duty is clearly defined in Czech financial legislation.

- Allow the MOF to publish reports with information on individual pension funds obtained during the supervision process and without the prior approval of the pension funds concerned. However, section 38.1 of the Pension Fund Law (whereby information concerning a pension fund may only be used with its approval) is not repealed. This would seem to constrain investigative reports on wrongdoing among pension funds, limiting the role that a responsible free financial press can play in disseminating information about the performance of different pension funds.

Policy Recommendations

To promote the growth of private pension funds and enable them to play a more significant part in the Czech economy, the authorities need to consider various policy actions that range from simple measures that can be implemented without much difficulty, to more ambitious efforts, such as a systemic reform of the pension system, that would require careful preparation and extensive debate. The policy recommendations set out below are divided into three parts: (i) measures to strengthen the existing voluntary system, but without changing its character; (ii) measures that would change the character of the voluntary system; but would still retain the structure of the overall pension system; (iii) systemic pension reform, i.e., more fundamental changes in the overall structure of the pension system.

Measures that would strengthen the existing voluntary system. There are a number of measures that could be adopted to improve the voluntary system without changing its basic character. Many of the measures proposed below could be adopted immediately.

- The first priority is clearly to enact the proposed amendments without much delay in order to strengthen the current regulatory framework.

- The authorities would also be well advised to continue the merger process that is currently under way and to ensure that small funds are sound and operated efficiently and do not undermine the integrity of the whole system.

- In many countries, the application of investment limits is moving in the direction of the "prudent person" rule. To accelerate this process, and emphasize further the importance of fiduciary duty, investments in illiquid securities should be banned, while holdings of non-tradable assets (such as real estate) should also be banned or kept to very low levels.

- The authorities should strengthen the supervision function through the creation of an independent, pro-active, industry-financed, supervision agency with highly qualified and competitively remunerated staff. This would seek to develop confidence in the integrity of the system by undertaking more effective on-site inspections of pension funds and by issuing quarterly reports on the evolution of the system, the composition of assets, and the performance of individual funds. The perceptive report produced in January 1998 could form the basis for such reports.

- As regards authorization criteria, the proposed increase in minimum capital and stricter application of the "fit and proper" test are steps in the right direction. However, to strengthen the safety of assets further, the authorities could consider introducing mandatory reserves (solvency margin). This could range from 1 percent of assets under management if no guarantees and fixed liabilities are assumed, to much higher amounts if pension funds offer guaranteed rates of return. Reserves would have to be increased further for pension funds engaging in annuity business (see below).

- Clear accounting standards need to be developed and followed by all pension funds. These standards should stipulate the maintenance of individual records for the crediting of contributions and distributed profits, require a separation of own funds from those of participant balances, define the method of calculating and crediting annual profits as well as the treatment of unrealized capital gains and losses and of accrued but not received income. Asset valuation rules also need to be clarified and moved in the direction of using a "mark-to-market" approach. The frequency of valuation would depend on the model, mutual fund or endowment insurance, that is finally retained.

- As already noted, the segregation of the assets of participants from those of the founders, any sponsoring employers, asset managers, and custodial institutions is of paramount importance. The assets of the participants must be legally separate, should not be attachable, and should not be affected by any financial losses or other infringements of other institutions.

- Custodial arrangements are very important for combating fraud and for safekeeping the securities belonging to pension funds. Ideally, each fund should be required to use one authorized custodial institution, which should also be responsible for managing its operational account. Custodial institutions should be authorized by the banking supervision agency, but they should be institutions with proved technical capacity and with large financial resources to cover any losses from negligence or other causes. The proposed changes in the law impose the use of independent custodians but do not go far enough in precluding "second rate" institutions from performing this important function.

- To ensure professional management of assets, pension funds need to employ experienced and knowledgeable professionals as asset managers. The regulatory framework should require either the use of licensed individual experts on a full-time basis as internal asset managers, or the hiring of specialized companies that are licensed to offer asset management services. Asset managers should be authorized by the Securities Commission. External asset managers should be required to satisfy a substantial minimum capital requirement as well as a capital adequacy test. Pension funds should also be allowed to use as many external asset managers as they see fit. If custodial arrangements are limited to one institution, having several external asset managers would not pose particular problems, while it would allow the use of specialized investment expertise.

- The issue of required rates of return should be examined. Pension funds could be required to keep within a reasonable band from specified "benchmark" rates of return. The authorities would also need to consider whether to introduce partial State guarantees on investment returns and, especially, on annuities. Although there are no easy answers to these questions, they should not be ignored.

- Pension funds should have a minimum size (e.g., 30,000 members) and constitute a layer of reserves to be allowed to offer annuities directly. In general, the offer of annuity products by pension funds needs to be subject to the same regulation as for insurance companies. The design, pricing and reserving of annuity products should be subject to proper actuarial review.

- Both actuarial reviews and accounting audits should be effected by qualified persons and reputable providers. As in the case of custodial services, it is very important to ensure that all pension funds are subject to reliable and independent actuarial reviews and audits.

- Greater transparency and information disclosure are of paramount importance. Sending out statements three or four times a year may increase costs, but it provides a very effective means of

disseminating data on the performance of different pension funds. Pension funds should also be required to furnish detailed data on their operations and performance to the supervision authority on a more regular basis (at least quarterly), while the latter should be encouraged to publish regular reports on the evolution of pension funds.

- Without consistent standards on advertising, pension funds may tend to emphasize their performance over short periods, especially if they are favorable to them. Rules on advertising could aim to facilitate performance comparisons by requiring disclosure of returns over a pre-specified set of terms (3 months, 1 year, 3 years, and 5 years) and comparison with the average for the sector.

Measures that would change the character of the existing voluntary system. The measures described above do not address some basic weaknesses of the current scheme, such as its short-term orientation and its functioning on endowment insurance principles. Irrespective of whether a compulsory second pillar is introduced or not, the authorities would need to consider changing the basic structure of the current voluntary scheme.

- To change its short-term orientation, the current scheme could be formally linked to retirement. Any withdrawals prior to retirement would be subject to tax penalties that would aim to recoup the State subsidies (and investment income earned on them). Authorized, penalty-free withdrawals could be limited to cases of distress arising from unemployment or medical emergencies. In addition, to encourage a greater accumulation of retirement savings, a minimum contribution rate could be specified. This rate should be determined by actuarial studies, but would probably lie around 5 percent.

- To provide stronger tax incentives to higher income people, consideration should be given to a redesigning of the tax treatment of pension funds with a view to adopting the EET system (Exempt contribution, Exempt investment income, Tax benefits). The tax deductibility of contributions should be subject to an upper ceiling. Given the effectiveness of the State contribution in encouraging participation by lower income people, the state subsidy could be maintained but perhaps lowered, especially if the public pillar is designed to redistribute in favor of low income pensioners. Retention of the State subsidy would imply that the tax deductibility of own contributions would only apply above a threshold amount.

- To move away from the endowment insurance principles, consideration should be given to the mutual fund model. In the early 1990s, when the current scheme was designed, European insurance companies favored the endowment insurance model rather than the mutual fund model. However, the recent fast growth of mutual funds in most countries around the world has contributed to a change of attitudes, and has underscored the advantages of mutual fund model in terms of transparency, asset valuation, legal segregation of assets, security, and ease of regulation. The mutual fund model provides disability and term life insurance (to protect workers and their dependents from accidents happening before they reach retirement) though separate but parallel purchase of insurance policies on a group basis.[60] The transition to a mutual fund model could be gradual. Pension funds may be allowed to offer both types of accounts to existing participants for a number of years, while offering only the mutual fund model to new participants. Insurance

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[60] This would resemble the operation of universal life policies. Use of the endowment insurance model is not necessary for the provision of these important benefits.

companies offer unit-linked policies as well as group pension contracts and annuities outside the scope of the legislation covering voluntary supplementary pension funds. Their views as well as those of the pension funds should be sought on all the regulatory changes discussed in this report.

Systemic Pension Reform. The case for a systemic pension reform, such as the ones recently implemented by Hungary and Poland, would need to be studied in detail. The authorities may want to consider the introduction of a mandatory second pillar, given the inevitable reduction in PAYG benefits in the future, particularly for young workers, and the need to ensure a comprehensive coverage of the labor force. It is not the task of this report to elaborate in detail the factors that would need to be taken into account in conducting such a review, or the benefits of implementing such a reform.[61] But as already noted, changes in the basic structure of the current scheme would be needed irrespective of whether or when systemic reform is implemented.

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61 These issues are discussed at great length in World Bank (1994).

CHAPTER VI: INSURANCE COMPANIES

Introduction

The Czech insurance sector has a long tradition, going back to the 17th century. It experienced steady growth in the nineteenth century and especially during the independence years between 1918-38, but its development was interrupted during the war and the communist era. All insurance companies (amounting to more than 700) were nationalized in 1945, and ultimately merged into one State-owned company in 1948. This was divided into two segments in 1969, providing services to each of the two parts of the Republic (Czech Insurance Association (1997)).

After the collapse of communism, a new insurance law was adopted in 1991. The state monopoly in insurance was removed and the former state insurance company, Ceska Pojistovna (CP), was converted into a joint-stock company, competing with newly established firms. The total number of companies increased steadily, reaching 40 in 1997. CP continues to be the largest insurance company and has a dominant (though declining) market share of nearly 60 percent.

The insurance market now exhibits a number of significant strengths but also suffers from some important weaknesses. The entry of new companies, especially some of the large European companies, has stimulated competition, innovation and efficiency. However, market concentration is still high, with continuing legal monopolies in some specific segments, while several of the smaller companies are financially weak and may even be insolvent. Moreover, insurance supervision needs considerable restructuring, moving away from the traditional substantive (or material) approach to insurance regulation and emphasizing the prudential and solvency monitoring approach that is now practised in EU countries. Various legal and structural changes are under preparation that aim to rectify this position and bring the Czech insurance market closer to the patterns prevailing in EU countries.

This chapter seeks to contribute to the Government's efforts to develop the insurance sector and prepare it for European integration. Section two reviews the current regulatory framework with a view to identifying the most important gaps and weaknesses. This is followed by an analysis of the structure and performance of the sector. The fourth and last section concludes with an overall assessment, a discussion of the process of approximating current legislation to EU directives, and a set of policy recommendations.

Regulatory Framework

Insurance operations are governed by Insurance Law 185/1991, as amended by the Ministry of Finance Decree 52/1994, which sets the rules for the creation and placement of technical reserves. This basic legislation is complemented by the Civil and Commercial Codes, tax laws and legal regulations concerning specific types of insurance (motor vehicle third-party liability and workmen's compensation).

The Government is aware that the current regulatory framework still has a number of weaknesses, and that accession to the European Union will require harmonization of the Czech insurance law with EU directives. The MoF has drafted a paper that assesses the state of development of the insurance industry, identifies its achievements and deficiencies, and discusses the need for several changes in the Law (MoF 1998). Significant amendments to the insurance law are under preparation,

in order to remedy the deficiencies and achieve much greater harmonization to EU directives. The contents of the MoF paper and the proposed amendments are discussed in the last section.

Licensing Criteria

The current law allows state-owned enterprises, cooperatives, and joint-stock companies to offer insurance services provided that they obtain a license from the Ministry of Finance.[62] Foreign nationals may also establish a Czech insurance company, but only in the form of a joint-stock company. Foreign companies may also operate through branches.

Insurance companies may be licensed as specialized life or non-life companies, or as universal insurance companies conducting both classes of business.[63] All insurance business of Czech Republic residents must be placed with locally-registered companies or branches. A security deposit of CZK10 million (US$300,000) is required prior to the submission of an application.[64] Foreign companies may be required to lodge a larger security deposit if Czech companies are subject to a higher requirement in the respective home country.

Authorization requirements also include three-year business plans, showing the classes of insurance business to be undertaken, the expected volume and structure of business, the proposed capital structure, the reinsurance program, and the ability of the new company to meet its future obligations and build the required reserves.[65] The business plans must also include general policy conditions for different contracts, information on proposed premium rates, their method of calculation, and the probability tables on which they are based.

Although the regulatory framework generally favors competition and commercial freedom with financial responsibility, some compulsory lines of business are still subject to State control and are reserved for particular companies. Thus, Ceska Pojistovna is a monopoly insurer of Motor Third Party Liability (MTPL), while this company together with two former cooperative companies are the only ones authorized to operate in Workers Compensation (work accidents) business. These lines of business accounted respectively for 13 and 4.5 percent of total premiums in 1997. Premiums in these compulsory lines are set by the authorities. In all other areas, companies are free to set premium rates and general policy conditions, although supervisory approval is required for new products and for any modifications in existing contracts.

Prudential Regulation

Companies are currently required to maintain adequate technical reserves. For non-life business, technical reserves must be established for unearned premiums, outstanding claims (including incurred

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62 In the future it is proposed to authorize only privately-owned joint stock companies and co-operatives.

63 Legal amendments that are under preparation will preclude the licensing of new composite companies. Existing composites will be required to split their operations into two separate companies within 10 years.

64 This requirement will be eliminated under the proposed amendments and will be replaced by minimum capital requirements varying by class of insurance business.

65 A "fit and proper" test of the founders, board of directors, and senior officers of insurance companies is not currently included in authorization criteria, although this would be rectified under the proposed legal amendments.

but not reported claims), bonuses and discounts, and equalization of special risks. In life insurance, companies must establish mathematical reserves, reserves for outstanding claims, and reserves to cover liabilities arising from financial placement in the insured's name. Reserves are calculated by actuarial methods or, for some types of reserves such as claims reserves, on a case-by-case basis, including cost of settlement and loss adjustment. The proposed amendments would include the application of EU solvency margin standards and minimum guarantee funds varying by class of business.

Investment Rules

Insurance companies are generally required to invest their technical reserves in a prudent manner, but the regulatory framework does not really follow the prudent man rule, as there are a number of specific portfolio guidelines. For each type of reserve, insurance companies must place a minimum of 30 percent in deposits with a bank operating in the Czech Republic, but subject to a 20 percent limit per reserve in any one bank, as well as a 15 percent limit of the equity (capital stock) of that bank.

Above the minimum, reserves may be invested in state bonds, bank and corporate bonds, loans and credits guaranteed by a bank, mortgage loans not exceeding 20 percent of any reserve, real estate not exceeding 25 percent of any reserve, and company shares up to 10 percent of any reserve, but subject to a maximum investment in any one entity of 3 percent per reserve. The rules are strict and aim to achieve the objective of extra safety in illiquid financial markets. Over time, more liberal rules as applied by the EU would give companies more scope to optimize their returns in a prudent manner.

Tax Treatment

There are no taxes or special charges levied on insurance and reinsurance contracts. The build-up of technical reserves is also free of tax up to certain limits, while contributions made by insurance companies for loss prevention purposes are tax deductible. Insurance company profits are subject to corporate tax at the standard rate of 35 percent.

While no special taxes are levied on insurance, there are also no tax incentives for long-term life insurance business. The absence of tax deductibility for long-term savings is not only confined to life assurance, and has been already discussed in the chapter dealing with pension funds. The Czech Insurance Association (CAP) has prepared detailed proposals for providing tax relief on life premiums for ten-year or longer policies and up to an annual ceiling of 18,000 CZK.

Reinsurance

Because of the smallness of the local market, a fair amount of business, especially in large industrial and commercial risks, is reinsured with large international reinsurance companies. There is no local reinsurance company, although the largest three domestic companies are authorized to act as active reinsures (AXCO (1998)). CP has long-standing relations with the international reinsurance market on a direct basis or through major brokers. Recently created domestic insurers have also established reinsurance cover, while subsidiaries of foreign companies have access to the capacity available from their parent companies.

Distribution Networks

The Czech distribution system follows the pattern found in neighboring countries, such as Germany and Austria. Insurance companies employ their own office staff and full-time sales agents, as

well as self-employed agents for generating much of their business, especially in personal lines. However, industrial and commercial business is often and increasingly conducted through insurance brokers, some of which are affiliated with large international brokerage firms.

Direct selling is not developed, but most large banks and insurance companies have sought to expand bank assurance, aiming at cross-selling insurance products through the branch networks of banks, as well as banking products through the personal contacts of insurance agents. All the leading banks own or have majority stakes in insurance companies, and all leading insurance companies have stakes in banks.

There is little formal regulation of agents or brokers, except for reinsurance business conducted with foreign companies when a Ministry of Finance license is required. The Insurance Association has developed a code of good conduct for agents working for its member companies. The code also covers the conduct of insurance companies and their employees.

Information Disclosure

Insurance companies are required to publish, and file with the supervisory authority, audited annual accounts. Quarterly statistics must also be provided. Companies were given a period of two years for bringing their technical reserves to the level required by Decree 52/1994. However, there is no rating system that publishes assessments on the performance and financial standing of different companies.

The Supervisory Framework

Supervision of insurance companies is performed by the MoF. The supervision department in the MoF is divided into two sections, one dealing with licensing and the other with off-site surveillance and on-site inspections of existing companies. Supervisors have the power to enter business premises in the conduct of their duties, have the right to examine the books of insurance companies, participate in the preparation of annual and statutory accounts, and attend board meetings. The supervisory authority may impose a fine of up to 100 million CZK (US$3 million) for infringements of the law, for failure to implement measures prescribed by the supervisors, or for actions that harm the good name of insurance companies.

Despite having enforcement power, it seems that supervisors have focused more attention on approving general policy conditions, and less attention on examining the financial soundness of individual companies. Also, the supervisors have apparently shown a reluctance to impose fines in cases where imposition of the fine might push a company into insolvency. This suggests a regulatory forbearance toward financially weak companies. As insurance companies can be insolvent but not illiquid for a long period of time, allowing weak companies to operate without taking strong corrective measures (restructuring, recapitalization, merger, or closure), may undermine the quality of insurance products and distort the competitive position of different companies.

The authorities are aware of the current deficiencies of the supervisory function, as indicated in the recent evaluation performed by the MoF (1998b), which concludes that enforcement of compliance with current rules is completely unsatisfactory. It is further recognized that the number of 40 staff (of which 24 deal with pension funds and 16 with insurance companies) would need to be increased, with special emphasis placed on supervision and on-site inspections. Failure resolution mechanisms would also need to be strengthened.

Structure and Performance

State of Development

In the last five years there has been considerable, albeit irregular, growth of premiums in real terms, averaging 12 percent per year in the 1992-97 period (Table 6.1). Total premiums amounted in 1997 to 48.0 billion CZK, equivalent to US$1.4 billion, or 2.9 percent of GDP. Insurance business in the Czech Republic is still less developed than the EU average, but seems more advanced than other transitional countries and even some countries in the EU (Table 6.2).

Table 6.1: Evolution of Total Insurance Premiums, 1992-97

	1992	1993	1994	1995	1996	1997
Total Gross Premiums (bn CZK)	16.8	23.4	29.1	33.7	40.2	48.0
Real Premium Growth (in %)		25.0	13.1	7.3	9.8	6.5
Total Premiums/GDP (in %)	2.0	2.3	2.5	2.5	2.6	2.9
Life Premiums/GDP (in %)	0.6	0.8	0.6	0.6	0.7	0.8
Non-Life Premiums/GDP (in %)	1.4	1.5	1.9	1.9	1.9	2.1

Source: Ministry of Finance and Czech Insurance Association.

Table 6.2: Insurance Premiums in Czech Republic, Europe, and Transition Countries, 1995 (% of GDP)

	Total	Life	Non-Life
Czech Republic	2.9	0.8	2.1
EU Average	6.0	3.1	2.9
Max EU (UK)	10.3	3.7	6.6
Min EU (Greece)	1.6	0.8	0.8
Other Transition Countries	2.1	1.7	0.4

Sources: Sigma and Annex Table 6.1.

The life insurance business accounts for 25-30 percent of total premiums in 1992-97, a much lower share than the 50 percent average share in the EU. The lack of tax incentives for long-term insurance policies and the higher levels of inflation partly explain the relative underdevelopment of the life insurance sector. In the Czech Republic, there are millions of life insurance policies outstanding, and most households are covered by a life policy. However, the premiums involved are small and do not contribute to an accumulation of large amounts of long-term savings.[66]

Motor insurance accounts for around 30 percent of total premiums (Table 6.3), of which 11.5 percent is represented by third party liability, 16 percent by casco for commercial and industrial companies, and 3.5 percent by casco for individuals. Motor third party liability (MTPL) continues to be a monopoly of CP. Although it is not currently a profitable line of business (mostly because of controls on premiums), and there are concerns about the adequacy of existing reserves, many insurers would like to see a removal of the CP monopoly because MTPL is perceived as an entry point for other business. The management of CP also is in favor of demonopolizing MTPL, but it raises the problem

66 As noted in Chapter 5, the average contributions to private pension funds are also very small (3 percent of the average wage), limiting the potential growth of long-term savings.

of inadequate reserves for outstanding claims that was caused by the very low level of premiums in past years.[67]

Table 6.3: Premiums by Class of Business (% of total)

	1993	1994	1995	1996	1997
Total Life and Non-life	100.0	100.0	100.0	100.0	100.0
Non-life Total	74.7	74.5	72.5	73.1	73.3
Non-life Individuals	15.9	14.4	15.2	15.3	15.6
Property	9.1	8.2	7.8	7.9	9.0
Casco	4.6	3.2	3.1	3.5	4.6
Buildings	1.6	1.7	1.8	1.9	2.0
Contents	2.4	2.9	2.5	2.2	2.0
Liability	0.4	0.4	0.4	0.4	0.4
Accident	5.9	5.3	5.5	5.6	5.2
Other	0.9	0.9	1.9	1.8	1.3
Non-life Business	38.0	42.9	40.7	41.5	40.4
Property	23.4	15.5	14.3	12.6	10.9
Casco	n.a.*	12.2	13.2	16.2	15.9
Other	14.6	15.2	13.2	12.7	13.6
Compulsory	20.8	17.2	16.5	16.3	17.4
MTPL	15.8	12.4	11.6	11.5	12.9
WCA	5.0	4.9	4.9	4.8	4.5
Life Total	25.3	25.5	27.5	26.9	26.7
Life	21.6	21.3	22.7	21.8	21.8
Pension	3.7	4.2	4.8	5.1	4.8
Total Motor	n.a.	27.7	27.9	31.1	33.4

* included in preceding line.
Source: Czech Insurance Association.

Institutional Structure

As already noted, the number of insurance companies has grown very fast, reaching 40 companies plus the General Health Insurance Company in 1997. Eighteen of the companies operate as universal insurance companies, 18 specialize in non-life insurance, and 4 in life business. One universal company changed into a non-life company in 1998. Nineteen companies have no foreign ownership participation, 14 have foreign participation, and 7 are foreign owned or controlled (Table 6.4). The insurance sector employs over 16,000 people, as well as 30,000 agents. There are also over 3,000 insurance brokers, although less than 20 are important.

[67] MTPL premiums have risen by a factor of 10 in recent years, but from an extremely low level (the annual premium was 150 crowns and has been raised to 1500 crowns or about 50 US dollars).

Table 6.4: Number and Type of Insurance Companies, 1993-97

	1993	1994	1995	1996	1997
By type of business:					
Life Insurance	5	4	5	4	4
Non-life Insurance	7	10	15	15	18
Composites or Universal	8	13	15	16	18
Total	20	27	35	35	40
By Ownership:					
Domestic	7	10	15	15	19
Domestic (with foreign particip.)	7	10	12	12	14
Foreign	6	7	8	8	7
Total	20	27	35	35	40

Source: Ministry of Finance.

Although the Czech Insurance Company (CP) has experienced a 30 percent loss of its market share since 1993, the insurance market remains very concentrated. CP still controls a 60 percent market share, while only 7 companies have market shares in excess of 2.5 percent (Table 6.5). The two Kooperativa companies (Ceska and Moravskoslezska) have a combined share of nearly 14 percent. These two companies are strong in industrial and commercial risks, where they have a 30 percent market share, and in workers' compensation insurance. They are majority owned by the Austrian company, Wiener Staedtische, but effectively operate under local management.

Among foreign companies, Nationale Nederlanden (NN), and Allianz have attained relatively large market shares of around 5 percent. NN specializes in life insurance, accounting for 19 percent of life premiums, and has been an innovative force in the market. The ING group (which controls NN) and Allianz are also among the leaders in operating supplementary private pension funds. ING is also planning to expand its non-life activities. Including Wiener Staedtische, as well as Zurich, Gerling and Bundeslaender, there are altogether 9 continental European companies present in the Czech insurance market. Some well known foreign companies, such as AIG, Generali, Winterthur and Victoria still have very low market shares in total business, although they play a more important part in particular niches (insurance for multinationals and large industrial and commercial risks).

Reinsurance

Reinsurance cover is sought for large industrial and commercial risks, which also include business interruption and machinery breakdown. In 1996, 18 percent of total non-life premiums and 1 percent of life premiums were ceded to reinsurers (CAP 1997). As CP reports a reinsurance ratio of 6.6 percent, the rest of the market reinsures 40 percent of its business and retains only 60 percent. Although no detailed data are available on individual companies, it is very likely that smaller firms as well as local subsidiaries of foreign insurance companies resort to reinsurance on a much larger proportionate scale than the large local companies. The MOF estimates that some companies with limited underwriting capacity reinsure up to 70 percent of their business.

The Performance of the Sector

The performance of the insurance sector, like that of other parts of the financial system, may be analyzed from three perspectives. First, there is the issue of financial solidity and solvency of the companies operating in the market. Second, there is the issue of efficiency, which concerns

profitability, costs, and the quality of the service to customers. Third, there is the issue of fairness or protection of consumers from irresponsible behavior by insurers.

Table 6.5: Market Shares, 1993-97 (% of total)

	1993	1994	1995	1996	1997
Ceska Pojistovna	87.6	76.4	70.0	64.8	59.9
Ceska Kooperativa	6.3	9.3	9.5	9.7	9.7
Nationale Nederlanden	1.4	2.7	3.9	4.6	5.1
Moravskoslezska Kooperativa	3.2	4.0	4.5	4.0	4.0
Allianz Pojistovna	0.2	0.9	2.2	3.9	4.6
IPB Pojistovna	0.2	1.8	3.1	3.9	4.8
CS-Zivnostenska Pojistovna	0.3	1.5	2.1	2.4	2.8
Remaining 33 companies	0.8	3.4	4.7	6.7	9.1

Source: Czech Insurance Association.

The issue of solidity and solvency relates to the adequacy of capital and reserves for the risks underwritten by insurance companies. As shown in Table 6.6, the reported equity funds of insurance companies increased from 23 percent of total premiums in 1994 to 43 percent by 1996 but fell back to 30 percent in 1997. Compared to total assets, equity funds grew from 8.6 to 14 percent and then declined to 11 percent. Life reserves fell from 666 to 507 percent of premiums but still seem adequate, whereas non-life reserves experienced a major growth, going from 62 to 94 percent of premiums.

Table 6.6: Indicators of Solvency (%)

	1994	1996	1997
Equity Funds/Premiums	23	43	30
Equity Funds/Assets	8.6	14	11
Life Reserves/Premiums	666	527	507
Non-Life reserves/Premiums	62	93	94

Source: MOF and Czech Insurance Association.

The rise in non-life reserves may go a long way toward alleviating fears about the inadequacy of reserves, although reserves may still be weak in the case of MTPL. Part of the build up in non-life reserves is represented by a claim created by CP on the Czech government in compensation for the inadequate level of controlled motor premiums. Although this accounts for only 9 percent of total non-life reserves, it corresponds to 59 percent of MTPL premiums. It must also be noted that these indicators refer to the insurance sector as a whole. There are concerns about the financial soundness of some smaller firms, which have a large exposure in particular lines of business or in particular regions. Such firms have suffered a deterioration in their financial ratios following the heavy losses caused by the flood of 1997. Unless such companies are properly reinsured, their capital position and existing reserves may be inadequate for the risks assumed.

The profitability of the insurance sector seems to have fluctuated considerably, both over time and across institutions. The 1997 net profit represents a return on equity (ROE) of around 5 percent. This is well below the rate of inflation, but the ROE of profit making firms is possibly higher than 10 percent, if unrealized capital gains are included. The large negative 1996 result was caused by a massive loss suffered by CP in a futile attempt to recapitalize Kreditni Banka, Pilsen. The Czech Insurance Association (the basic source of information) does not indicate how many companies are suffering losses, and whether cumulative current and past losses of some firms exceed their reported

equity funds, but there can be little doubt that they represent a substantial segment of the market, especially among the smaller and newer companies.

The efficiency of insurance operations from the perspective of customers can be assessed by looking at loss, expense, and combined ratios. Loss ratios indicate what part of premiums revert to customers in the form of claim settlements, while expense ratios show how efficient insurance companies are in managing their affairs. Combined ratios bring these two ratios together. Loss ratios of close to 100 percent indicate high efficiency, except in cases where they are caused by controlled premiums or where nominal returns on investments are so high that insurance companies charge lower premiums as a way of passing on to their customers their large returns. High expense ratios provide an indication of inefficiency and lack of control over agents and distribution networks. Typically, contracts for individuals covering buildings and household contents have low loss and combined ratios, while motor third party liability and various types of personal liability have high loss ratios.

Available data for the Czech Republic are not sufficiently comprehensive to allow a detailed examination of the performance of different classes of business. For the whole of non-life insurance, loss ratios fluctuated around 55 percent in recent years. Adding about 20 percent for acquisition costs and administrative expenses produces a combined ratio of 75 percent, which is rather low by international standards. Insurance companies also receive substantial investment income on their reserves, which could reduce the ratio to levels below 70 percent. This figure suggests a favorable situation, although it should be noted that a large part of premiums has been absorbed by the build-up of nonlife reserves mentioned earlier. Moreover, many classes of business have long-tail distributions of losses which will be ultimately reflected in larger claims. It is highly likely that some lines of business are very profitable, and that a considerable amount of cross-subsidization between different classes of insurance may be taking place.

The third aspect of performance relates to fairness and the protection of consumers. No ombudsman office operates in the Czech Republic, and little information is published on the creditworthiness and efficiency of different companies. The absence of an ombudsman office implies that disputes are settled with delay and expense, and the absence of a rating system implies that consumers are not easily able to differentiate companies, and to avoid companies that are in weak financial condition, or have developed a record of disputed and delayed settlements.

Asset Allocation

The total assets of the insurance industry amounted to 125 billion CZK in 1997, the equivalent of 9 percent of GDP. Investments account for 66 percent of total assets, and receivables, which include claims on insurance agents and reinsurers, for 15 percent of the total. In some countries, receivables tend to be very high because of poor monitoring of agents, but the level found in the Czech Republic is not unduly high. However, 33 percent of investments are in low yield bank deposits (Table 6.7), reflecting the minimum 30 percent of their technical reserves that has to be placed in bank deposits. The remaining 67 percent may be placed in bonds and shares, but investments in foreign assets are still not allowed. Because of the lack of more detailed information, it is not possible to compare the asset allocation of insurance companies in the Czech Republic and the EU. However, it is noteworthy that bank deposits represent only 3 percent of investments in the EU (Table 6.7).

There is clearly a need to allow an increase in the share of higher yield assets in the portfolios of insurance companies. As there is some concern about the profitability and volatility of domestic equity, the MOF has considered allowing insurance companies to diversify their investments into securities

traded in organized exchanges of OECD countries. This would probably follow the same approach as that advocated for private pension funds.

Table 6.7: Allocation of Investments in 1996 (% of total)

	Czech Republic	EU 15
Bank Deposits	33.2	3.2
Bonds	n.a.	36.2
Loans	n.a.	15.5
Shares	n.a.	30.8
Investments in Affiliates	n.a.	3.8
Fixed assets	10.2	6.1
Other	56.6	4.3

Sources: CAP and CEA.

Overall Assessment and Policy Recommendations

Assessment

The Czech insurance sector has undergone dramatic changes in the past seven years. From a state monopoly and a stagnating market, it has evolved very rapidly to a market comprising 40 companies, with active participation by a dozen or so foreign companies, including some of the leading multinational firms in the sector. Competition and innovation are intensifying fast and the overall efficiency of the market is improving.

The regulatory framework was redesigned in a hurry in the early 1990s. As the main objective was to remove the state monopoly, the 1991 law initially emphasized the licensing process. As noted above, the supervisory authority focused extensively on vetting new applications and approving general policy conditions. Although a more liberal approach could have been followed, there was concern about moving away too fast from the substantive regulatory approach that prevailed at the time in most continental European countries. As a result, less emphasis was placed on solvency monitoring and on the professional credentials of new insurance companies.

The main weaknesses of the current situation are the presence of financially weak companies, the feeble enforcement of the prudential and protective provisions of existing legislation, the continuing monopolization of some basic classes of business, and the continuing approval requirement of general policy conditions. The requirement for prior supervisory approval discourages innovation and the introduction into the Czech market of insurance contracts that meet specialized needs and have been successfully launched in other more advanced countries.

Proposed Amendments

The authorities are well aware of these problems, as is made clear in the document supporting proposed future amendments to insurance legislation (MoF (1998b)). As mentioned before, the MoF paper assesses the state of development of the insurance industry in the Czech Republic, identifies its achievements and deficiencies, and proposes several changes to the regulatory framework.

Many of the proposed changes in insurance legislation are motivated by the need to comply with the requirements imposed by EU Insurance Directives. These are: (i) the first non-life and first life Directives regarding the conditions of admission, operation, withdrawal of authorization, and

supervision of insurance companies; (ii) the annual accounts Directive regarding the layout of the balance sheet and profit and loss statement, the valuation of assets and liabilities, and the analysis of premiums by class of activity and geographic market; and (iii) the third life and non-life Directives regarding the strengthening of prudential rules and the creation of the internal market in insurance based on mutual recognition. These directives also require the separation of life and non-life business, the abolition of legal monopolies, and the removal of the requirement of prior approval of premiums and general policy conditions. This section summarizes the proposals made in the MOF paper, while the final sub-section notes some areas that are not covered by the proposed amendments.

General Licensing Procedures. The MoF paper proposes to stop issuing new licenses to state-owned insurance companies, limiting new participation to joint-stock companies and cooperatives. As at present, foreign insurers will be allowed to set up local subsidiaries in the form of joint-stock companies. But in addition, they will be permitted to operate branches provided they have the consent of their home supervisory authority with confirmation of the adequacy of their technical reserves and solvency.

The MoF paper also proposes to stop authorizing composite (or universal) insurers and to limit licensing to separate life, non-life and reinsurance subsidiaries. Following accepted opinion in EU countries, the rationale for this is the need to protect the long-term reserves of life insurance business from losses in the more volatile non-life business. Existing composite companies will be allowed a ten-year period for separating their affairs into subsidiaries. However, life insurance companies will be allowed to engage in sickness and injury business, although through separate accounts.

Minimum Capital. The MoF paper proposes to remove the security deposit and replace it with minimum capital requirements for different classes of business. The following limits are suggested: for life insurance, 60 million CZK; for non-life insurance, from 34 million CZK (health or property insurance) to 200 million (aviation or marine insurance). Companies operating in more than one class of business for which different minimum capital requirements are set will have to observe the highest limit. Composite or universal companies will be required to comply with the sum of the minimum amounts for life and non-life business. The minimum capital for specialized active reinsurers will be 500 million CZK, although for primary insurers that seek to obtain an active reinsurance license a higher limit of 1 billion CZK is considered.

"Fit and Proper" Test. The Ministry proposes to tighten the rules concerning the fitness and propriety of decision makers in the insurance field. A "fit and proper" test will be applied on the founders, directors and senior officers of insurance companies and changes in ownership will be subject to a vetting process to ensure the fitness of new owners.

General Policy Conditions. The MoF paper proposes to eliminate the prior approval of policy conditions in an effort to stimulate innovation and competition. However, policy conditions for compulsory classes of business will continue to require prior approval, while any lack of clarity with regard to particular conditions would be interpreted in favor of the insured. In addition, the authorities may require prior notification of technical bases used for calculating premiums and technical provisions.

Business Plans. Business plans will continue to form an essential part of the licensing process. The new law will spell out in greater detail the expected content of business plans. These will include business projections and a reinsurance plan for the ensuing three years as well as an explanation of underwriting and reserving policies.

Solvency Monitoring and Investment Rules. The new law will apply the standard EU solvency margins on companies operating in the Czech Republic, separating by main class of business (life and non-life) and implementing the corresponding EU directives. It will also introduce the "prudent man rule" that emphasizes the benefits of investment diversification, use of detailed and consistent valuation rules, and use of currency matching rules. This approach will imply elimination of the requirement to invest a minimum 30 percent of technical reserves in bank deposits. Solvency monitoring will also require the introduction of standardized risk classification according to classes of insurance.

Information Disclosure. The Ministry proposes to strengthen information disclosure requirements. In addition to the submission of reports, these will also cover notification and approval of changes in the management and supervisory boards and the senior officer. Approval may be withheld if the nominated persons do not have clean criminal records and lack the necessary professional qualifications. The Ministry will also require notification and approval of changes in ownership of insurance companies through transfer of shares or inheritance.

Intermediaries. The MoF paper proposes to eliminate the discriminatory treatment of brokers acting for a foreign insurance company, who are the only brokers that currently require a license. It proposes to introduce licensing criteria in terms of qualifications and capital requirements but through a special law that could also cover insurance consultants, loss adjusters, and other professionals connected with the insurance business.

Actuaries and Auditors. It is proposed that insurance companies should be required to employ or contract the services of an appointed actuary (responsible insurance mathematician), who would be required to assess the adequacy of reserves and the solvency of the insurance company. Insurance companies will also be required to undertake independent audits. Auditors and actuaries will be required to report to the supervisory authority, as well as to the companies' management and supervisory boards any deviations from acceptable practice and any financial weaknesses or violations of prudential rules.

Failure Resolution Mechanisms. The MoF paper notes the limits in the powers of the supervisory authority in dealing with companies facing financial difficulties. It proposes to expand its enforcement powers to enable it to require preparation and approval of a short-term recovery plan, decrease capital by offsetting accumulated losses, impose compulsory administration, and approve the transfer of business as well as mergers and liquidations.

Organization of Supervisory Authority. The MoF document highlights the problems facing the supervisory authority, describing as completely unsatisfactory the current state of affairs as far as ensuring compliance with existing rules is concerned. It proposes a major reorganization and expansion of staff by recruiting highly qualified professionals. It raises the possibility of creating an independent industry-financed supervisory authority, although it lists as an alternative option retention of the current structure as a unit of the MoF. The paper also proposes that the supervisory authority should be obliged to publish an annual report on the state of development and supervision of the insurance market, and be free to exchange information with supervisory authorities in other countries.

A restructured supervision authority would focus on examining the solvency and financial health of the companies, checking their internal management control systems, and initiating corrective action. The authority should be encouraged to exercise its enforcement powers, especially in closing financially

weak companies. However, insurance companies should be granted the right to appeal to the courts all decisions taken under laws and regulations.

Policy Recommendations

The proposed amendments to insurance legislation would address most of the problems affecting the insurance sector today and would bring the regulation of the insurance business much closer to the EU directives. These amendments should be enacted and implemented without delay. But in finalizing the assessment of the industry and the elaboration of amendments, the authorities should also consider addressing some issues that have not been sufficiently covered in the MoF paper. These include the future of the currently monopolized classes of business, the use of tax incentives for life insurance, the need for more effective consumer protection, and the supervision of financial conglomerates.

Abolition of Monopolies. At present, a monopoly exists in the Czech Republic for MTPL and for workers' compensation. Although they are probably unprofitable, these lines are perceived as important entry-level insurance products and many companies are interested in participating in these markets. The problem caused by the inadequacy of reserves for MTPL could be handled by a one time transfer from the state budget, or by imposing a special tax on motor insurance, such as the proposed 120 crowns levy. As market monopolies are not permitted under EU legislation, their abolition should be inserted in the EU approximation program.

Tax Incentives for Life Insurance. As already noted, no tax incentives are offered for long-term life insurance. While any tax incentives need to be used with caution (because they create distortions and cannot be easily targeted), most advanced countries have used them at one time or another to promote long-term savings. The Czech Insurance Association (CAP) has prepared detailed proposals for providing tax relief on life premiums for ten-year or longer policies and up to an annual ceiling of 18,000 CZK. This needs to be considered favorably in conjunction with the redesign of the tax treatment of pension funds, as discussed in the preceding chapter.

Consumer Protection. To protect consumers from imprudent or fraudulent behavior by insurance companies, consumer protection would need to be strengthened by the creation of an ombudsman office (or similar body) to investigate complaints and settle disputes without going through the lengthy and expensive judicial process. In addition, the use of insurance company ratings could be promoted to provide an independent assessment of the cost and adequacy of insurance products, and of the financial standing of individual companies.

Supervision of Financial Conglomerates. The last issue goes beyond the narrow confines of insurance business. The presence of financial conglomerates, that include banks, insurance companies, pension funds and other entities, raises the possibility of "double gearing" of capital and the emergence of conflict of interest situations. As in other countries, rules on supervision of financial groups would need to be established. These should take into account the operations of insurance companies and their interaction with the operations of other companies in the groups. In relation to conglomerates, it is important that the insurance, banking and securities legislation be amended in such a way as to allow the supervisory authorities from the three sectors to exchange information and co-operate between themselves and with supervisors in other countries. The central bank, the new securities commission, and the insurance supervisory department have recently signed a broad agreement on cooperation. This needs to be implemented speedily and efficiently in order to tackle the many problems raised by conglomerate groups.

CHAPTER VII: SUMMARY OF FINDINGS AND RECOMMENDATIONS

Structural Reforms and Growth Performance

The Czech Republic achieved impressive economic results after its independence in 1993, but macroeconomic performance started faltering in 1996, as indicated by the emergence of external imbalances and the sharp slowdown in growth. The high implied ICORs indicate that the Czech economy has been growing below its potential, and that there is scope for further gains in efficiency. The existence of pockets of inefficiency in the Czech economy is reflected not only in the high ICORs, but also in enterprise financial data and in unemployment figures. There was an impressive reduction in enterprise losses right after independence, but financial results worsened in 1996, and improved only moderately during 1997. The unemployment numbers have been unreasonably low by any international comparison, and particularly low by comparison with other transitional countries undergoing restructuring, suggesting the existence of redundant labour.

The disappointing growth performance raises the question of the progress achieved at structural reforms. The Czech Republic went through deep structural reforms in the early 1990s, has performed better than other transitional countries in the fiscal area, and implemented an innovative voucher privatization program that enabled the fast privatization of a large number of enterprises. However, the regulatory framework for enterprises and capital market institutions contained flaws that became apparent over time, and that ultimately hindered the efficiency gains expected from privatisation. Also, there was much less progress in privatising the State banks, and in setting up a functional mechanism for the resolution of bad debts. These deficiencies help explain the mixed restructuring record and the low growth performance.

The designers of the voucher program were aware that a pure distribution of vouchers would lead to a very fragmented ownership and weak corporate governance. In order to combine fast privatization with a rapid improvement in corporate governance, investment funds were introduced, and the regulatory framework in the capital market was designed so as to facilitate secondary trading and the consolidation of ownership. Secondary trading in shares was indeed intensive, and led effectively to a consolidation of ownership by funds and strategic investors. The greater concentration of ownership was per se a positive development, as the presence of large shareholders is known to be one of the essential components of a sound governance system. However, ownership concentration was achieved at some cost, and was not complemented by other elements essential for a sound governance system.

First, secondary trading was frequently conducted in a non-transparent way, involving fraudulent transactions by fund and enterprise managers. The transfer of assets at the expense of fund shareholders was facilitated by the closed-end structure of most funds, weaknesses in the regulatory framework, the lax supervision, and the multiplicity of trading channels. The perception of widespread fraud was ultimately reflected in the low prices of fund shares, which were almost fully discounted in the case of funds converted into holding companies. Although many individuals may have at the end obtained some return from these vouchers (acquired at a symbolic cost), this return was far below the expectations generated by the program, and tarnished the image of capital market institutions in general.

Second, the fact that ownership became more concentrated did not necessarily imply the emergence of strong governance. Investment funds do not seem to have performed well their governance role, as indicated by the high discounts and the evidence that enterprises that were primarily

controlled by investment funds restructured less than enterprises controlled by strategic investors. The enterprises controlled by strategic investors performed better on average, but there are many cases where the new controlling shareholder has exercised control for personal gain, at the expense of the financial health of the enterprise and the interests of minority shareholders. Finally, the external mechanisms of governance remained weak during the post-privatisation years. The major banks remained subject to political influence, suffered from a weak capital base, and faced serious obstacles in the areas of foreclosure and bankruptcy.

In sum, the governance system that emerged in the aftermath of voucher privatisation proved rather unbalanced. Whereas the greater concentration of ownership tended to improve governance, there were also four weak areas: (i) corporate governance by investment funds turned out to be weaker than expected; (ii) the absence of minority shareholder protection opened room for abuse by large shareholders; (iii) external mechanisms of governance remained dysfunctional; and (iv) supervision of capital market activities was powerless and under-equipped.

Recent Efforts to Strengthen the Regulatory Framework

The Government reacted to the emergence of problems in the capital market by strengthening the regulatory framework in several steps. In 1996, several amendments to the Commercial Code and the Investment Fund Act were introduced. These amendments improved, among other things, disclosure and minority shareholder protection rules, and prevented a further conversion of investment funds into holding companies. However, it became apparent in 1997 that these improvements had not been able to improve governance of investment funds significantly and to arrest fraud. For this reason, new amendments were drafted in 1997 and enacted in 1998. They included amendments to the Act on Banks, the introduction of an autonomous Securities Exchange Commission, and amendments to the Investment Fund Act.

The amendments to the Act on Banks attempt to minimize conflicts of interest which may arise when banks are creditors and owners at the same time, by introducing more restrictive board rules and investment rules. These amendments have been accompanied by two other important developments in the banking sector. First, the Czech National Bank has been adopting more stringent loan classification and provisioning rules, and pressing the banks to become more assertive towards their debtors. Second, the Government privatized a major State bank in early 1998 and announced the privatization of the remaining banks. These measures should result in greater pressure from creditors and contribute to enterprise restructuring.

The creation of a Securities Commission outside the MoF is another very important step towards a sound capital market. Although the new Commission does not yet enjoy full regulatory independence (the regulations have to be issued as Government Decrees), it has substantial enforcement power, and has proved the willingness to use it in the first months of operation.

Finally, the new Investment Fund Act has introduced radical changes in the capital market, by mandating the opening of all investment funds within a period of three years. This change is justified by the poor performance of these funds and the need to rebuild confidence in capital market institutions. The opening will allow better exit opportunities for a large number of individual investors, eliminate the weakest institutions, and generally improve fund management, because under-performers will face for the first time the threat of net redemptions.

In addition to these changes, the Government is also preparing improvements in the regulatory framework for pension funds and insurance companies that may affect significantly the way these institutions operate, and could have a positive impact in the overall efficiency of the capital market. Indeed, although the scandals reported by the press have focused public attention on investment funds, it should noted that the assets of insurance companies are already larger than the assets of investment funds, and that the pension fund sector should be one of the fastest growing sectors in the capital market in future years, due to the need to curtail public pension benefits.

The central question faced by Czech policy-makers is whether the changes that have been recently enacted, combined with those that are under elaboration, will enable the capital market to perform all its functions efficiently and contribute to the development of the Czech economy. The previous chapters identified the deficiencies that still remain, and provided recommendations for further improvements. The next section summarises the report's assessment of the current situation in each sector, and the last section summarises the main policy recommendations.

Assessing Remaining Gaps in the Regulatory and Institutional Framework

The Securities Market

Despite the initial impression that may be given by the traditional indicators of size and liquidity, the Czech capital market has effectively a moderate size, has been a negligible source of finance, and is largely illiquid, except for a small number of traded shares. The traditional price indicators are also misleading and do not capture the divergence of security prices across different marketplaces. While the increase in market size and liquidity can be seen as long-term goals, the lack of price integrity is a more fundamental problem which requires a more immediate solution, as it undermines confidence in securities as a medium of investment, distorts credit assessment and the valuation of financial intermediaries, and perverts the allocation of risk capital.

The achievement of price integrity will require further progress on two parallel tracks. The Commission must continue improving the regulatory framework and, especially, strengthen its enforcement capacity, as most of the fraudulent operations with securities have been breaches of existing laws. These improvements in regulation and enforcement should be accompanied by parallel improvements in the organization of the market. Market regulators have to face the failure of the PSE and the RMS to provide transparent trading systems (a consolidated price display, co-ordinated settlement and freedom in order-routing) and assure unified pricing. The schism in settlement facilities also inhibits arbitrage between markets, increases overhead costs and frustrates true delivery versus payment on share transactions.

Investment Funds

As mentioned above, the mandatory opening of funds introduced by the new Investment Fund Act is a radical but basically sound decision. However, more detailed guidelines to orient institutions during the opening process may still be lacking. Also, the present regulatory framework is basically adequate to guide the operations of open funds, but some deficiencies still remain, primarily in the area of pricing, taxation, and custodian services. Finally, there is a role for genuine venture capital funds exerting active governance, but the regulatory framework may not allow these funds to emerge. The law allows new closed-end funds to be formed, but subjects them to the same regulation of open funds. Unless the regulatory framework is adapted, the new closed-end funds will not play the role of venture capital funds, and may draw little interest from investors.

Corporate Governance

Although the internal mechanisms of governance have been considerably improved since 1996, minority shareholder rights are still inadequate, corporate controllers are not fully accountable to shareholders, and the quality of financial reporting is not consistent across enterprises. Holding companies constitute a challenge, as they are still a collective investment vehicle, but have escaped the more stringent regulatory framework that applies to these institutions.

There is also wide scope to strengthen the external mechanisms of governance. Although one State bank was privatized in early 1998, the three largest commercial banks remain State-owned and still hold a very large amount of bad loans in their portfolios. The Czech National Bank has been pressing the banks to increase the level of provisions and become more assertive towards their debtors, but tax rules have prevented a faster provision build-up. The rules on collateral and foreclosure and the bankruptcy framework remain cumbersome. The Consolidation Bank has received a large amount of classified loans from the other banks but has contributed little to the restructuring of its bad debtors.

Finally, enforcement capacity needs to be built up. Although the introduction of a Securities Commission is a very important step towards stronger enforcement capacity, the Commission still has limited financial and regulatory independence, and still needs to implement a well-articulated training and institutional development program. Moreover, enforcement of the legal framework does not depend on the Commission alone, also involving the police and the court system, which is poorly equipped to deal with commercial disputes and bankruptcy cases.

Pension Funds

The private pension sector suffers from a number of weaknesses. First, the institutions may fail to promote supplementary pensions, as they effectively offer short term savings policies. Second, because the funds have a relatively short time horizon, they may not become providers of long-term resources and will contribute less effectively to capital formation and resource allocation. Third, participants are not required to save a minimum percentage of their earnings, leading to a low average contribution and constraining the growth of the system. Fourth, there are no clear rules on accounting standards and information disclosure, and no guidelines on advertising. As a result, the system is opaque, and the public cannot make informed decisions. Finally, the supervisory function is very weak, and appears to focus on ensuring that no participant receives multiple state contributions, and to overlook the importance of prudent and transparent policies. The MOF prepared a perceptive analysis that highlights both the achievements and the failures of the current system (MOF (1998a)), and the Government has already drafted various amendments to the Pension Fund Law that address several, but not all, of the problems identified above.

Insurance Companies

The main weaknesses of the current situation are the presence of financially weak companies, the feeble enforcement of the prudential provisions of existing legislation, the continuing monopoly of some basic classes of business, and the continuing approval requirement of general policy conditions. The requirement for prior supervisory approval discourages innovation and the introduction into the Czech market of insurance contracts that meet specialized needs and have been successfully launched in other more advanced countries. The authorities are well aware of these problems, as is made clear in the document supporting proposed future amendments to insurance legislation (MOF (1998b)).

Summary of Policy Recommendations

Securities Market

The broad objectives of the Commission for the security market should be to restrict the number of publicly tradable companies (to those that really fit this profile and that may benefit from open access to the capital market), integrate the different trading channels, and ensure compliance with the regulatory framework, while also proposing and implementing further improvements in legislation). These actions would ensure the achievement of price convergence, increase market liquidity, restore confidence, and open more possibilities for new equity issues.

The reduction in the number of publicly tradable companies would be naturally achieved if the controlling shareholder is induced to buy the shares of stranded minority shareholders and transform the company into a privately-held company. This could be achieved by strengthening the enforcement of the existing rules and by introducing further improvements in the internal mechanisms of governance, particularly in the area of minority shareholder protection (as discussed below). These two sets of actions would make it costly to remain public and encourage several firms to change their legal status. The reduction in the number of tradable shares would "clean the market", allowing the Commission to supervise fewer companies more effectively, and contribute to more transparency in trading.

The measures required to improve regulatory framework and the enforcement of the trading rules would include: (i) reviewing the jurisdiction of the Securities Commission, particularly in relation to its powers over the Stock Exchange; (ii) incorporating conduct of business rules for the protection of investors as required by the Investment Services Directive; (iii) introducing a better compliance regime by attaching an audit trail so that trading operations can be exposed to regulatory inspection; (iv) developing procedures for criminal prosecution for those who dishonestly misappropriate corporate or fund assets; (v) applying administrative sanctions available to the Commission, for reprimand, fine, or suspension of licence; (vi) exploring the self-regulatory powers of the Stock Exchange, to allow for summary treatment of complaints against member firms and provision for restitution of profits arising from misconduct.

The measures that would deal with market fragmentation and contribute to a better market structure would include: (i) establishing the universal clearing centre; (ii) requiring facilities for order routing which ensure that investors obtain best execution, and prohibit "cross-listing" on more than one organized market when this is not possible; (iii) enforcing timely and comprehensive price disclosure, pre-trade and post-trade; (iv) enforcing comprehensive disclosure by issuers, in accord with a strict interpretation of the disclosure requirements of the Securities Law; (v) providing guidance to publicly traded companies on notifiable events and appropriate information release to events of varying importance; (vi) establishing quality of market monitoring for breadth, depth and liquidity of the market and quality of price discovery.

Investment Funds

- *Managing the opening of investment funds.* The Securities Commission should ensure an orderly opening process and a fair treatment of investors during the opening. That would include: (i) issuing guidelines clarifying the different stages of the opening process; (ii) allowing the temporary suspension of redemptions in situations of illiquidity and issuing guidelines for the execution of outstanding requests at the same price; (iii) retaining exit opportunities during the temporary suspension by allowing secondary trading; (iv) providing temporary regulatory

forbearance during the opening, (v) providing standardized texts for articles of association and prospectuses to facilitate the transition from closed to open funds.

- *Improve Pricing Rules by:* (i) replacing historical pricing by forward pricing; (ii) granting some leeway for managers to price securities issued by enterprises in bankruptcy or not traded, subject to approval by the depository and the auditors; (iii) ensuring that there is single pricing of open funds' shares, when the shares are also traded in secondary markets, by de-listing or mandating that the shares be negotiated at NAV minus/plus a margin; (iv) shortening the maximum period of redemption, or accruing interest on NAV to compensate for the delay.

- *Adjust the Regulatory Framework for Integration into the EU by:* (i) obliging fund managers to publish detailed portfolio composition for all holdings; (ii) reducing the maximum holdings of individual equities, from 10 to 5 percent of a fund's net assets (with the appropriate exceptions); (iii) strengthening the role of the depository; (iv) removing the tax disadvantage affecting Czech funds by exempting them from VAT, and by removing the taxation on income and capital gains (which implies double taxation); (v) preparing regulations preventing abusive or fraudulent sales practices, and encouraging self-regulatory bodies to establish and enforce codes of conduct on their members.

- *Handle Holding Companies by:* (i) improving the internal mechanisms of corporate governance for all joint stock companies along the lines suggested below; (ii) imposing additional disclosure rules in the case of holding companies—similar to those imposed on investment funds.

- *Open Space for Genuine Venture Capital Funds.* Introduce separate investment guidelines for closed-end funds formed in the future, allowing them to hold much larger portions of equity and to exert active governance, subject to well-written prospectuses and articles of association.

Corporate Governance

Recommendations for Improvements in Internal Governance

- *Privatize enterprises still controlled by the State, mainly banks and utilities.* Comprehensive regulatory reforms should be undertaken, opening the ground for the privatization of utilities.

- *Strengthen further minority shareholder protection by*: (i) reducing the threshold for shareholders to call a general meeting, from 10 percent of the share capital to 5 percent, and to a still lower percentage for the largest companies; (ii) entitling any shareholder to obtain a full copy of the list of all shareholders of the company, upon request and payment of the costs. If this measure violates shareholder privacy, the authorities should explore legal ways for the board of directors or the securities registrar to obtain shareholders' permission to reveal their identity and address; (iii) requiring any general meeting to include the participation of not only large shareholders, but also a minimum proportion of the total number of shareholders; (iv) allowing cumulative voting to strengthen the influence of small shareholders in the board; (v) reducing the threshold at which large shareholders must offer to buy-out of minority shareholders, from 50 percent to 25-30 percent; (vi) requiring prior shareholder approval of "vulnerable" transactions such as those relating to the purchase or disposal of substantial assets; (vii) encouraging proxy arrangements.

- *Clarify the duties of directors to the company.* The "bright-line" rules designed to ensure that directors are aware of their obligations would include: (i) a duty to act with diligence and in what the director believes to be the best interests of the company; (ii) a duty to disclose to other directors any personal interest in a transaction to be entered into by the company and not to vote on that transaction; and (iii) a duty to ensure that the business of the company is not carried on in such a way as to create a substantial risk of loss to creditors. These duties should be enforceable by the company, or by any shareholder.

- *Improve disclosure and the quality of information.* (i) The Government should introduce the obligation to disclose consolidated financial statements and, especially, to enforce disclosure requirements; (ii) the Government should consider transferring the responsibility for setting accounting and auditing standards to independent and self-regulating bodies, although the Commission should retain the authority to impose supplemental reporting requirements; (iii) the removal of an external auditor should not be permitted except with the prior approval of the shareholders voting at a general meeting; (iv) supervisory boards could be required to establish an audit committee, and the committee would oversee the internal audit function; meet periodically with the external auditors, and propose to the general meeting the appointment or removal of the external auditors; (iv) external auditors should owe a duty of care to the company and to shareholders and should be able to be sued for negligence in the performance of their duties.

- *Improve monitoring of boards by shareholders.* Consider modifying the board system so that the supervisory board is elected by the shareholders and the management board members are appointed or removed by the supervisory board.

- *Address the problem of holding companies.* All the measures proposed above to protect minority shareholder and improve transparency would also benefit the minority shareholders of holding companies. However, additional measures to deal with these companies are justified. Any company with more than a minimum number of shareholders (e.g., 100 shareholders), and with a substantial proportion of its assets invested in publicly tradable securities should provide to its shareholders a comparable level of disclosure to that required for investment funds.

- *Address the problem of unit trusts.* Consider changes in order to allow investors to convene meetings and remove the management company in the same manner as the shareholders of a company can remove a director and appoint a replacement. Management contracts should be terminable at any time by a suitable voting majority of investors in the fund.

- *Strengthen enforcement capacity.* Further improvements to the independence of the Securities Commission would be desirable, and the Commission would need to develop and implement an institutional development program, including substantial training to develop the skills of its staff. Court judges and officials also need to receive training and resources to be to handle commercial disputes more efficiently.

Recommendations for Improvements in External Governance

- *Enhance the credibility and actual prospects of take-overs* by entitling investors to obtain a full copy of the list of all shareholders of the company, upon request and payment of the costs. If this action is considered to violate shareholder privacy, the authorities should consider legal ways that would allow outsiders to ask for the shareholders' permission to reveal their identity and address in order

to formulate a buyout offer. This communication could be carried out by the board of directors or the securities registrar.

- *Enhance the banks' capacity to handle problem debtors* through the following measures: (i) privatizing the State banks as fast as possible, through sales to strategic investors; (ii) reviewing tax rules to allow a faster build up of provisions already in the pre-privatization stage; (iii) allowing the Consolidation Bank to auction its classified loans, or outsource collection and restructuring in exchange for collection fee.

- *Streamline the bankruptcy process* through the following measures: (i) reducing the discretion of the court to decide whether or not to grant a bankruptcy petition; (ii) enhancing the function of the administrator by allowing any person licensed to practice law or accountancy in the Czech Republic to be eligible for appointment; (iii) making the fee structure more based on performance; (iv) allowing debtors suffering from liquidity difficulties to seek reorganization under court protection; (v) removing the obligation for debtors to demonstrate that a minimum proportion of liabilities will be able to be repaid, allowing debtors and creditors to develop any solution they think best preserves their interests; including swaps of debt for equity in restructured firms; (vi) improving the courts' capacity to handle bankruptcy work. Creating specialist bankruptcy courts and training programs for bankruptcy judges and court officials.

Pension Funds

Measures that would improve the voluntary private system without changing its basic character. The Government should enact the amendments that have already been drafted, as these would greatly contribute to improving the regulatory framework for private pension funds. The amendments would: (i) require a minimum term of 36 months for pension contracts; (ii) increase the cut-off date for old age pensions to 55 from the current 50; (iii) raise the minimum capital of pension funds from CZK20 to 50 million; (iv) force pension funds to hire an independent bank as depository; (v) require official approval of any significant transfer of shares of pension funds; (vi) allow pension funds to invest in bonds and equities listed in approved foreign markets (most or all OECD countries are expected to be approved); (vii) impose a fiduciary duty on pension fund managers; and (viii) allow the Ministry of Finance to publish reports with information on individual pension funds obtained during the supervision process.

In addition to enacting promptly the amendments, the authorities should also consider implementing as soon as possible the following measures: (i) encouraging the merger process to ensure that small funds do not undermine the integrity of the whole system; (ii) creating an independent and well-staffed supervision agency; (iii) banning investments in illiquid securities and banning or severely restricting holdings of real estate assets; (iv) introducing mandatory solvency reserves; (v) requiring a separation of own funds from participant balances, defining the treatment of unrealized capital gains, and improving asset valuation rules; (vi) segregating the assets of participants from those of the founders, asset managers, and custodial institutions; (vii) requiring the use of one authorized custodial institution; (viii) requiring either the use of licensed individual asset managers on a full-time basis, or the hiring of licensed companies as external asset managers; (ix) requiring a minimum size for pension funds to offer annuities directly, and subject annuity products to actuarial review; (x) requiring the distribution of statements to participants three or four times a year, and the provision of detailed data to the Supervision on a quarterly basis; and (xi) introducing standards on advertising by, e.g., requiring disclosure of returns over a pre-specified set of terms and comparison with the sector. Note that most of these measures could be simply added to the amendments already drafted, and submitted to Parliament in a short period of time.

Measures that would change the character of the voluntary private system. The measures described above do not address some basic weaknesses of the current scheme, such as its short-term orientation and its functioning on endowment insurance principles. To address these problems, the regulators may consider the following changes: (i) linking the current scheme formally to retirement; (ii) imposing a minimum contribution of around 5 percent of income; (iii) redesigning the tax treatment of pension funds with a view to adopting the EET system, and lowering the State contribution; (iv) considering a more structural move from the endowment insurance model to the mutual fund model.

Insurance Companies

The authorities are considering a number of amendments designed to strengthen the regulatory framework for the sector and ensure much greater compliance with EU directives. These would include: (i) stop issuing new licenses to state-owned insurance companies; (ii) stop licensing universal insurers and limit licensing to separate life, non-life and reinsurance subsidiaries; (iii) replacing the security deposit by minimum capital requirements; (iv) applying a "fit and proper" test on the founders, directors and senior officers of insurance companies; (v) eliminating the prior approval of policy conditions; (vi) spelling out in detail the content of business plans; (vii) applying the standard EU solvency margins, separated by life and non-life; (viii) introducing the "prudent man rule" for asset management; (ix) strengthening disclosure requirements; and notification of management changes; (x) eliminating the discriminatory treatment of brokers acting for a foreign insurance company; (xi) requiring the employment of an actuary and independent audits; (xii) strengthening supervision.

The proposed amendments should be implemented without delay, as they would address most of the problems affecting the sector, and would bring the regulatory framework much closer to the EU directives. In finalizing the elaboration of amendments, the authorities should also consider the following additional measures: (i) abolishing monopolies in motor third party liability (MTPL) and workers' compensation (the problem caused by the inadequacy of reserves for MTPL could be handled by a one time transfer from the state budget, or by imposing a special tax on motor insurance); (ii) offering tax incentives for long-term life insurance (to be determined in conjunction with the redesign of the tax treatment of pension funds); (iii) strengthening consumer protection by the creation of an ombudsman office or similar body, and by promoting the use of insurance company ratings; and (iv) adapting regulation and supervision to the growing presence of financial conglomerates (this would require implementing the co-operation agreement between the central bank, the securities commission, and the insurance supervision department, and might also require amendments to the insurance, banking and securities legislation to allow the supervisory authorities from the three sectors to exchange information and co-operate between themselves and with supervisors in other countries).

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ANNEX 1: ANALYSIS OF PRICE INTEGRITY IN THE CZECH CAPITAL MARKET

This annex analyzes the behavior of stock prices on the Czech capital markets from January 1996 to March 1998. To contribute to the broader study of the market efficiency, the annex focuses on the issues of price spreads and price differences across different marketplaces and their possible convergence over time. Statistical analysis is performed for the whole-sample averages as well as for various subgroups defined by the firm's size, frequency of trading, or the market segment to which the firm belongs. Nonparametric tests and simple structural models are employed to study the behavior of average price spreads and price differences and their cross-firm variability across groups and over time as well as to study the possible interactions and causal relationships.

Data

Two sets of data were provided by the Securities Exchange Commission (SEC):

(1) volume-weighted average monthly prices of the 100 biggest firms as observed on:

- the Prague Stock Exchange (PSE) - central market (auction)
- the PSE - direct trades
- the RM-System (RMS) - central market (auction)
- the RMS - direct trades
- the Securities Center (SCP)

(2) monthly minimum and maximum prices of all traded firms as observed on:

- the PSE - central market (auction)
- the PSE - direct trades
- the SCP.

Both data sets include price observations for 27 months between January 1996 and March 1998. There are 2,700 observations in the average-price file and 42,157 observations in the data set on minimum and maximum prices. Data on minimum and maximum prices observed on the RMS were not provided. More important, however, is the fact that only the minimum and maximum prices for each security are available, and information on trading volumes at those prices is missing. Thus, the low-volume trades done at extremely high or low prices for some securities may possibly influence the analysis of average price spreads. With data on trading volumes, it would be possible to evaluate the importance of these extreme observations for the overall price-volume distribution.

Before the statistical analysis was conducted several modifications were applied to the data. First, two observations of average prices and 113 observations of minimum and maximum prices were discarded as being subject to possible data error.[1] Second, observations with a price equal zero were understood as "no trade" observations. Thus, the data used for the analysis contain 2,698 observations

[1] The criterion for discarding was an average/maximum price higher than 20,000CZK. There were observations where the maximum price on one market was more than 100 times higher than the maximum prices on other markets.

on volume-weighted average monthly prices for the 100 biggest firms and 42,044 observations on monthly minimum and maximum prices for the total of 2277 securities (ISINs).[2]

These data are analyzed for the individual firms, for groups of firms, and for the whole sample. The following criteria were used for group definitions:

- size of the firm
- trading frequency of the firm
- market segment to which the firm belongs
- firm/investment fund or unit trust.

The PSE market capitalization as of the end of February 1996[3] was used for allocating the firms into five size quintiles. The PSE trading frequency for each firm in the period March 1995 - February 1996[4] was used for allocating the firms into five trading quintiles.

In September 1995, the PSE market was divided in three sections: main (A), secondary (B), and free (C). These sections differ by the listing requirements and information obligations. Each security also belongs to one trading group and is traded:

1. in the morning auction and in the afternoon continuous auction at a variable price, or
2. in the morning auction and in the afternoon continuous auction at a fixed price.

Combining the section of the PSE market with the trading group, the set of all stocks is divided into five segments of the market: A1, A2, B2, C2, C3. The yet undefined group C3 contains those securities from the free market which had very low liquidity and were (for some time period) traded only twice a week, in the fixed-price afternoon auction.

Though the organization of the market changed in connection with the withdrawal of issues during 1997, this distribution of firms into five segments of the PSE market may provide information on the role of the trading procedure and information obligations for price spreads and price differences across marketplaces.

Finally, the prices were also studied separately for investment funds and unit trusts, and for all other firms.

Methodology

For the purposes of statistical inference, I use several nonparametric tests and simple structural models in the following sections. While the models are described as they are used, the nonparametric tests are reviewed here.

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2 Although the maximum number of firms traded contemporaneously on the market is about 1,750, there were many changes in the characteristics of the issues during the existence of the market, leading to changes in their identification numbers (ISINs).

3 Obtained from author's database.

4 Defined as the number of days traded over the total number of trading days on the central market of the PSE; obtained from the author's database.

The sign test compares two samples and tests the equality of medians for matched pairs of observations. The null hypothesis that the medians are equal is equivalent to the hypothesis that the median of the differences is zero. This, in turn, is equivalent to the hypothesis that the true proportion of positive (negative) signs of differences is one-half. The test statistic then is:

$$Z = \frac{2S_+ - (n+1)}{\sqrt{n}}$$

where S_+ is the number of observations where the difference is positive, and n is the total number of observations. An asymptotic standard normal approximation to the distribution of the test statistic Z works well for samples with $n > 20$ and is used here.

Wilcoxon test also investigates the hypothesis that two samples are from populations with the same median. Let m and n, $m \le n$ denote the size of the two samples, respectively. The test statistic T is calculated by ranking all $m+n$ observations in ascending order of magnitude, assigning tied values the average rank, and then summing the ranks corresponding to the original sample of m observations. Under the null hypothesis the expected value for T is

$$E(T) = \frac{m(m+n+1)}{2}$$

and the variance is

$$\sigma^2(T) = \frac{mn(m+n+1)}{12}.$$

The transformation

$$W = \frac{T - E(T)}{\sqrt{\sigma^2(T)}}$$

is then to be compared to the critical values of the standard normal distribution.

Kruskal-Wallis test is used for testing the hypothesis that several samples are from the same population. It is the multiple-sample generalization of the two-sample Wilcoxon rank sum test. The test statistic H is defined as

$$H = \frac{12}{n(n+1)} \sum_{j=1}^{m} \frac{R_j^2}{n_j} - 3(n+1).$$

The sampling distribution of H is approximately ^{2} with $m-1$ degrees of freedom.

Analysis of Price Convergence

In this section, I compare the evolution of prices on different marketplaces (PSE, RMS, SCP) by studying the percentage price differences among these markets. For each stock and particular marketplace, a series of percentage price differences is defined as follows:

$$PSEDPD_i = 100 * (PSED_i - PSEA_i) / PSEA_i,$$
$$RMSAPD_i = 100 * (RMSA_i - PSEA_i) / PSEA_i,$$
$$RMSDPD_i = 100 * (RMSD_i - PSEA_i) / PSEA_i,$$
$$SCPPD_i = 100 * (SCP_i - PSEA_i) / PSEA_i$$

where

$PSEA_i$ = average monthly price of stock i on the PSE – auction,
$PSED_i$ = average monthly price of stock i on the PSE – direct trades,
$RMSA_i$ = average monthly price of stock i on the RMS – auction,
$RMSD_i$ = average monthly price of stock i on the RMS – direct trades,
SCP_i = average monthly price of stock i on the SCP.

These percentage price differences are then averaged over all stocks or over a given group of stocks. Two types of averages are computed: unweighted (or, equally-weighted) average and size-weighted average.

Price Differences among Marketplaces and Their Cross-firm Variability

Graph G.1 (Section Tables and Graphs) shows the whole-sample unweighted and weighted averages of percentage price differences between the central market of the PSE and other marketplaces. As expected, the prices observed on the RMS auctions are closest to the PSE auction prices. On the other hand, prices observed for the SCP transfers and the RMS direct trades are not well linked to the PSE auction prices. Moreover, the differences among the prices in these marketplaces seem to increase over time.

Graph G.2 shows sample standard deviations of the percentage price differences. The cross-firm volatility of the RMS auction – PSE auction price differences is very low, i.e., prices of all firms on these two marketplaces are relatively closely linked. On the other hand, price differences between the SCP and the PSE auction, or between the RMS direct trades and the PSE auction, vary significantly across firms. This variability again seems to increase over time.

Kruskal-Wallis, Wilcoxon and sign tests were applied to test whether the average percentage price differences differ significantly among marketplaces, i.e. whether, for example, the percentage price difference between the PSE direct trades and PSE auction is significantly different than the percentage price difference between the RMS direct trades and PSE auction.

Detailed results of these tests for the average price differences computed over the whole sample or over subgroups of the 100 firms as defined above are reported in Table A.1 in the Appendix. The rejection of the null hypothesis of the Kruskal-Wallis test means that at least one of the percentage price differences is significantly different from the others. This is marked by the "*" ("**") next to the value of Kruskal-Wallis test statistic which denotes rejection of the null hypothesis at the 5% (1%) significance level.

For each subgroup of firms, detailed results of the Wilcoxon and sign tests are provided in the 4x4 matrix below the Kruskal-Wallis test statistic. Wilcoxon test statistics are reported below the diagonal of that matrix, while the sign test statistics are given in the entries above the diagonal. Rejection of the null hypothesis of the Wilcoxon or sign test means that one of the variables is significantly higher/lower than the other. This is marked by "H" or "HH" ("L" or "LL") next to the

value of test statistic which denote the situation where the 'row' percentage price difference is at a 5% or 1% significance level higher (lower) than the 'column' percentage price difference.[5]

For reader's convenience, the results of the Wilcoxon and sign tests are summarized in the Table T.1, which shows, by subgroups of firms and for both unweighted and weighted data, rankings of percentage price differences on the four marketplaces. These rankings are generally not sensitive to the criterion used for partition of firms in subgroups. Thus, independently of firm's size, its trading frequency or segment of the market, lowest price differences (using PSE auction price as benchmark) are observed for transfers at the SCP. These differences often are negative, meaning that prices at SCP are lower than prices in the PSE auction. Similar observation holds for the RMS auction. There, the prices are generally lower than prices in the PSE auction, but these two price series are much more closely linked. The direct trades at PSE are regularly done at prices significantly higher than prices at other marketplaces and exhibit, on average, highest differences from the PSE auction prices. The time trends in prices and price differences are, however, different, as shown in the next section.

Changes in Price Differences Over Time

An important issue in evaluating the performance of the Czech capital markets is whether prices on different marketplaces become more closely linked as the market evolves, i.e., whether the price discrepancies decrease over time. Absolute values of the percentage price differences are therefore analyzed in this section.

For this purpose, the nonparametric Wilcoxon test was used to compare two subsamples of the 27 monthly observations, i.e., the equality of (the absolute value of) price difference medians was tested for the periods January 1996 - February 1997 and March 1997 - March 1998.

The existence of a time trend in the price difference series was also investigated by applying a simple t test of significance of time trend in the regression of absolute price difference series on the constant and time trend, i.e., evaluating the statistical significance of coefficient α in the model

$$APD_t = c + \alpha t + \varepsilon_t$$

where APD_t denotes abolute price difference observed at month t.

Both tests were conducted individually for each of the top 100 firms as well as for average percentage price differences computed over subgroups of firms. Individual-firm results are reported in Table A.2 of the Appendix. As in Table A.1, the statistical significance (rejection of null hypothesis) is marked by "H", "HH", "L" or "LL" symbols next to the value of test statistic.[6] Results of these tests are summarized in Table T.2. Table A.3 in the Appendix then provides results of the Wilcoxon and tests for time changes in unweighted and weighted average percentage price differences for firm subgroups.

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5 Thus, the results of the two tests agree if, for example, the entry below the diagonal is 6.306LL and the corresponding entry above the diagonal equals -5.389HH. These are the test statistics of Wilcoxon/sign tests comparing whole-sample unweighted average percentage price differences between the RMS auction and the PSE auction and between the PSE direct trades and the PSE auction. These tests imply that prices in the RMS auction are significantly closer to prices in the PSE auction than the prices of the PSE direct trades.

6 Thus, for example, the relative difference in prices of KOMERCNI BANKA (ISIN CZ0008019106) in the RMS auction and on the central market of the PSE has significantly increased over time according to the Wilcoxon test (test statistic -2.281H).

Table T.2 shows that in none of the marketplaces has the price difference decreased for a significant number of firms. On the other hand, the price differences have significantly increased for about one-tenth of the top 100 firms in the PSE direct trades, RMS auction, and RMS direct trades. This proportion of firms displaying an increase in the magnitude of the price differences is even higher for SCP, where it is approximately 15%.

VAR Model of Percentage Price Differences and Their Interactions

So far, the annex has compared the price differences among the marketplaces and investigated their change over time. These changes may, however, be linked if the price differences observed on one marketplace influence the price differences on the other marketplaces. Thus, the fact that prices on one marketplace become more closely linked to the prices in the auction of the PSE may subsequently lead to prices on other marketplaces converging to those of the PSE auction. In this section, the annex provides estimates of simple first-order unstructured VAR model to investigate such possible interactions among the percentage price differences series.

The following system of equations was estimated

$$PSEDPD_t = \alpha_{11} PSEDPD_{t-1} + \alpha_{12} RMSAPD_{t-1} + \alpha_{13} RMSDPD_{t-1} + \alpha_{14} SCPPD_{t-1} + \varepsilon_{1t}$$
$$RMSAPD_t = \alpha_{21} PSEDPD_{t-1} + \alpha_{22} RMSAPD_{t-1} + \alpha_{23} RMSDPD_{t-1} + \alpha_{24} SCPPD_{t-1} + \varepsilon_{2t}$$
$$RMSDPD_t = \alpha_{31} PSEDPD_{t-1} + \alpha_{32} RMSAPD_{t-1} + \alpha_{33} RMSDPD_{t-1} + \alpha_{34} SCPPD_{t-1} + \varepsilon_{3t}$$
$$SCPPD_t = \alpha_{41} PSEDPD_{t-1} + \alpha_{42} RMSAPD_{t-1} + \alpha_{43} RMSDPD_{t-1} + \alpha_{44} SCPPD_{t-1} + \varepsilon_{4t}.$$

As for all steps of the analysis, this model was estimated for all-firm average price differences as well as for group-average differences. All results are reported in Table A.4 in the Appendix. This table gives estimates of the coefficients of the model and their statistical significance. It also provides results of the block exogeneity test, i.e., an F-test which determines the joint significance of lagged values of other-market price differences in each equation. Rejection of the null hypothesis of this test means that there are statistically significant influences to the particular price difference series coming from the last-period price differences observed on other marketplaces.

In all models, the estimated "diagonal" coefficients (i.e., coefficients on the lagged value of the particular price difference series) are lower than 1, which supports the hypothesis of price convergence, that is, the hypothesis of relative price differences decreasing over time. Not many interactions among the price difference series are documented, with the exception of significance of price difference between RMS auction and PSE auction for determination of price difference between PSE or RMS direct trades and PSE auction.

Analysis of 'Raw' Price Spreads

The second data set provided by SEC contains data on monthly minimum and maximum prices observed on the central market and in direct trades on the PSE and in the transfers at the SCP. I have discussed the deficiency of these data in Section 2. Here, the annex applies the methodology used in the previous section to investigate the price spreads. Results reported in this section should be read with caution, given that the data on minimum and maximum prices are not weighted by trading volume.

The data set includes just the minimum and maximum prices, and no information is available on where in this price interval the majority of the trading activity is positioned. For this reason, I call the price spreads analyzed in this section the 'raw' percentage price spreads and define them simply as

$$PSEARPS_i = 100 * (PSEAMAX_i - PSEAMIN_i) / PSEAMAX_i$$

$$PSEDRPS_i = 100 * (PSEDMAX_i - PSEDMIN_i) / PSEDMAX_i$$

$$SCPRPS_i = 100 * (SCPMAX_i - SCPMIN_i) / SCPMAX_i .$$

These percentage price differences are again averaged over all stocks or over a given group of stocks.

For the top 100 firms, however, the data on volume weighted average monthly prices are available. Thus, the price spreads may also be defined using that information. These price spreads are analyzed in the next section.

'Raw' Price Spreads on Different Marketplaces and Their Cross-firm Variability

The analysis starts by showing the differences in price spreads among different marketplaces. Graph G.3 shows the whole-sample unweighted and weighted average 'raw' percentage price spreads. Graph G.4 displays sample standard deviations of these 'raw' percentage price spreads. The average 'raw' price spreads on the PSE (both auction and direct trades) are relatively stable over time and equal about 15%. The 'raw' price spreads are also not very different across firms and their cross-firm variability does not change over time.

The SCP price spreads exhibit completely different pattern. Note that the maximum possible value of a 'raw' price spread as defined above is 100%. This is the (theoretical) case when the minimum price equals 0 (and maximum price is higher than 0). Graph G.3 shows that the real situation is not far from this theoretical limit. The size-weighted average price spread on the SCP starts at about 95% in January 1996 and decreases only very slowly to fluctuate around 70% in last six months. Moreover, graph G.4 documents increasing cross-firm variation in these price spreads.

Table A.5 in the Appendix reports the results of the Kruskal-Wallis, Wilcoxon and sign tests of the equality of these price spreads. The structure of the table and the notation used for marking the rejection of the null hypothesis is the same as in Table A.1.

Results of the Wilcoxon and sign tests are summarized in Table T.3, which shows, by subgroups of firms and for both unweighted and weighted data, rankings of 'raw' percentage price spreads on the three marketplaces. This table confirms the previous observations: price spreads are by far highest on the SCP. When firms are equally-weighted, prices spreads in the PSE auction are significantly higher than price spreads observed in the PSE direct trades for all subgroups based on size, trading frequency or market segment. When firms are weighted by their size, price spreads are higher in the PSE direct trades than in the PSE auction. This means that prices fluctuate relatively less on the PSE central market than in the PSE direct trades for large firms, while the opposite is true for smaller firms.

Changes in 'raw' price spreads over time

The hypothesis that the 'raw' percentage price spreads decrease over time was tested using the nonparametric Wilcoxon test which compared two subsamples of the 27 monthly observations, i.e., periods January 1996 - February 1997 and March 1997 - March 1998.

The presence of the time trends in the price spreads series was also investigated by a simple t test of significance of a time trend in the regression of a price spread series on the constant and time trend, i.e., evaluating the statistical significance of coefficient α in the model

$$RPS_t = c + \alpha t + \varepsilon_t$$

where RPS_t denotes the 'raw' price spread observed at month t.

Results of these tests are provided in Table A.6 in the Appendix. These results show that the 'raw' SCP price spreads decreased significantly for all groups of firms. They also document an increase in the price spreads in the PSE direct trades, particularly for small firms and, on the contrary, for big firms from the market segment A1. These price spreads have increased primarily for funds and unit trusts, as shown in the last panel of the table. For firms in the A1 market segment, the spreads in the PSE auction also increased. Finally, note that price spreads in all marketplaces decreased significantly for small and less frequently traded firms.

VAR model of 'raw' percentage price spreads and their interactions

In this section, a simple first-order unstructured VAR model is estimated to investigate possible interactions among the 'raw' percentage price spreads observed in different marketplaces.

The following system of equations was estimated

$$PSEARPS_t = \alpha_{11} PSEARPS_{t-1} + \alpha_{12} PSEDRPS_{t-1} + \alpha_{13} SCPRPS_{t-1} + \varepsilon_{1t}$$
$$PSEDRPS_t = \alpha_{21} PSEARPS_{t-1} + \alpha_{22} PSEDRPS_{t-1} + \alpha_{23} SCPRPS_{t-1} + \varepsilon_{2t}$$
$$SCPRPS_t = \alpha_{31} PSEARPS_{t-1} + \alpha_{32} PSEDRPS_{t-1} + \alpha_{33} SCPRPS_{t-1} + \varepsilon_{3t}.$$

As in the previous sections, this model was estimated for all-firm average price spreads as well as for group-average spreads. The results are reported in Table A.7 in the Appendix, which gives estimates of the coefficients of the model and their statistical significance. It also provides results of the block exogeneity test, i.e., an F-test of joint significance of lagged values of other-market price spreads in each equation. Rejection of the null hypothesis of this test means that there are statistically significant influences on the particular price spread series coming from the last-period price spreads observed in other marketplaces.

As for the price differences studied in the previous section, the estimated coefficients on the own lagged price spreads are lower than 1. This evidence supports the hypothesis that the price spreads decrease over time. The interactions between price spreads are more common, as documented also by frequent rejection of the block exogeneity hypothesis. Namely, the lagged price spreads observed in the PSE auction and those observed on the SCP often influence the price spreads in all three marketplaces.

Analysis of Price Spreads for 100 Top Firms

The data on minimum and maximum prices can be combined with the volume-weighted average price to define price spreads reflecting the price-volume distribution as follows

$$PSEAPS_i = 100 * (PSEAMAX_i - PSEAMIN_i) / PSEA_i$$

$$PSEDPS_i = 100 * (PSEDMAX_i - PSEDMIN_i) / PSED_i$$

$$SCPPS_i = 100 * (SCPMAX_i - SCPMIN_i) / SCP_i .$$

Price spreads defined in this way may provide at least some indication about the dispersion of prices around the "true" market price, approximated here by the volume-weighted average price.

Price spreads on different marketplaces and their cross-firm variability

Graph G.5 shows the whole-sample unweighted and weighted average percentage price spreads defined in the preceding paragraphs. Graph G.6 displays sample standard deviations of these percentage price spreads.

Because the SCP prices are often very different from the PSE auction prices, the resulting price spreads frequently take on large values. It was necessary to use a different scaling for the display of these spreads, and, in the provided graphs, they are therefore plotted using a secondary vertical axis.

The graphs document no significant time change in the average spreads or their cross-firm variation in the case of the PSE auction and the PSE direct trades. On the other hand, the SCP price spreads decreased significantly over time. The cross-firm variation in these spreads also lowered. Nevertheless, they are still almost ten times larger (on average) than the price spreads observed on the PSE.

Table A.8 in the Appendix reports the results of the Kruskal-Wallis, Wilcoxon and sign tests of the equality of the price spreads. The structure of the table and the notation used for marking rejection of the null hypothesis is the same as in above sections.

Results of the Wilcoxon and sign tests are summarized in the Table T.4, which shows, by subgroups of firms and for both unweighted and weighted data, rankings of percentage price spreads of 100 top firms in the three marketplaces. The SCP price spreads are highest for almost all groups of firms, followed by price spreads observed in the PSE direct trades. As expected, the PSE auction spreads are generally lowest. Only for small, infrequently traded firms from segment C3 (which are very rarely traded in the PSE direct trades) are the spreads in the PSE auction larger than the direct trades spreads.

Changes in price spreads over time

As in the previous section, the hypothesis that percentage price spreads decrease over time for 100 top firms was tested using the nonparametric Wilcoxon test by comparing the two subsamples of the 27 monthly observations, i.e., comparing data from periods January 1996 - February 1997 and March 1997 - March 1998.

The existence of a time trend in the price spreads series was also investigated by a simple t test of time trend significance in the regression of price spread series on the constant and time trend, i.e., evaluating the statistical significance of coefficient α in the model

$$PS_t = c + \alpha t + \varepsilon_t$$

where PS_t denotes the price spread observed at month t.

Both tests were conducted individually for each of the top 100 firms as well as for average percentage price differences computed over subgroups of firms. Individual-firm results are reported in Table A.9 in the Appendix. They are summarized in Table T.5. This table shows that the PSE price spreads (both in auction and in direct trades) have significantly decreased for about one-tenth of the 100 top firms. However, for about the same proportion of the firms, these spreads have significantly increased over time. The SCP price spreads provide much clearer picture: for majority of firms, the SCP price spreads have significantly decreased. The hypothesis of no time change in percentage price spreads was rejected at the 1% significance level for almost 50% of the firms.

Detailed results of the subgroup tests are provided in Table A.10 in the Appendix. They show that the price spreads in the PSE auction have increased for the biggest, frequently traded firms from market segment A1. However, they have not significantly increased for the investment funds and unit trusts.

VAR model of percentage price spreads and their interactions

In this section, a simple first-order unstructured VAR model is estimated to investigate possible interactions among the percentage price spreads observed on different marketplaces.

The following system of equations was estimated

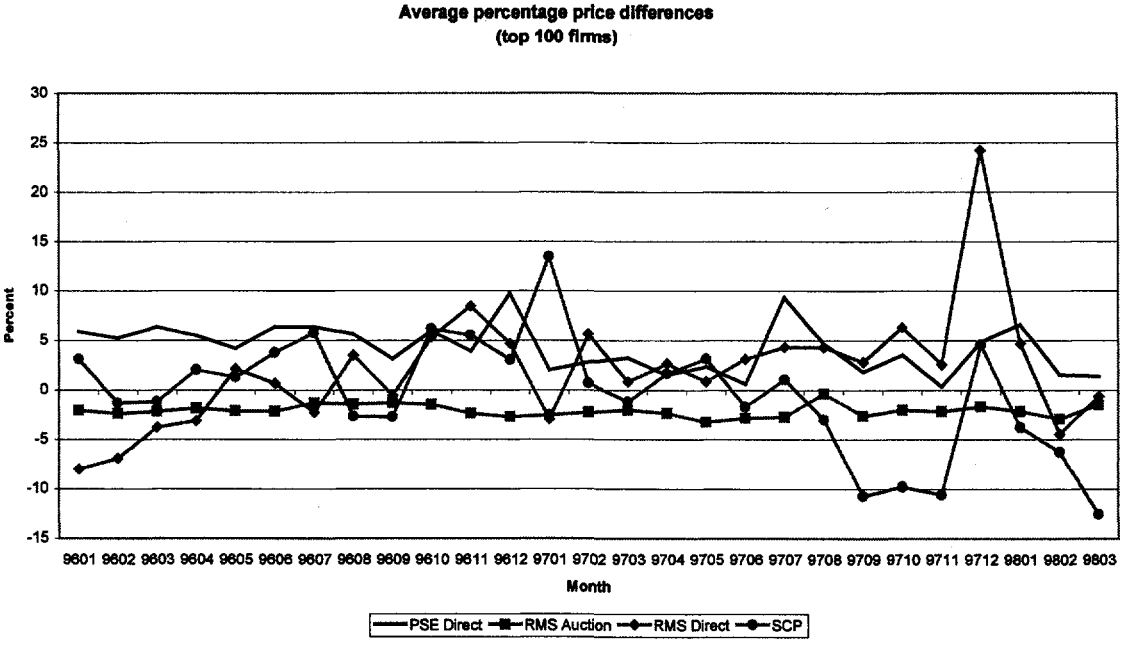
$$PSEAPS_t = \alpha_{11} PSEAPS_{t-1} + \alpha_{12} PSEDPS_{t-1} + \alpha_{13} SCPPS_{t-1} + \varepsilon_{1t}$$
$$PSEDPS_t = \alpha_{21} PSEAPS_{t-1} + \alpha_{22} PSEDPS_{t-1} + \alpha_{23} SCPPS_{t-1} + \varepsilon_{2t}$$
$$SCPPS_t = \alpha_{31} PSEAPS_{t-1} + \alpha_{32} PSEDPS_{t-1} + \alpha_{33} SCPPS_{t-1} + \varepsilon_{3t}.$$

This model was estimated for all-firm average price spreads as well as for group-average spreads. The results are reported in Table A.11 in the Appendix, which gives estimates of the coefficients of the model and their statistical significance. It also provides results of the block exogeneity test.

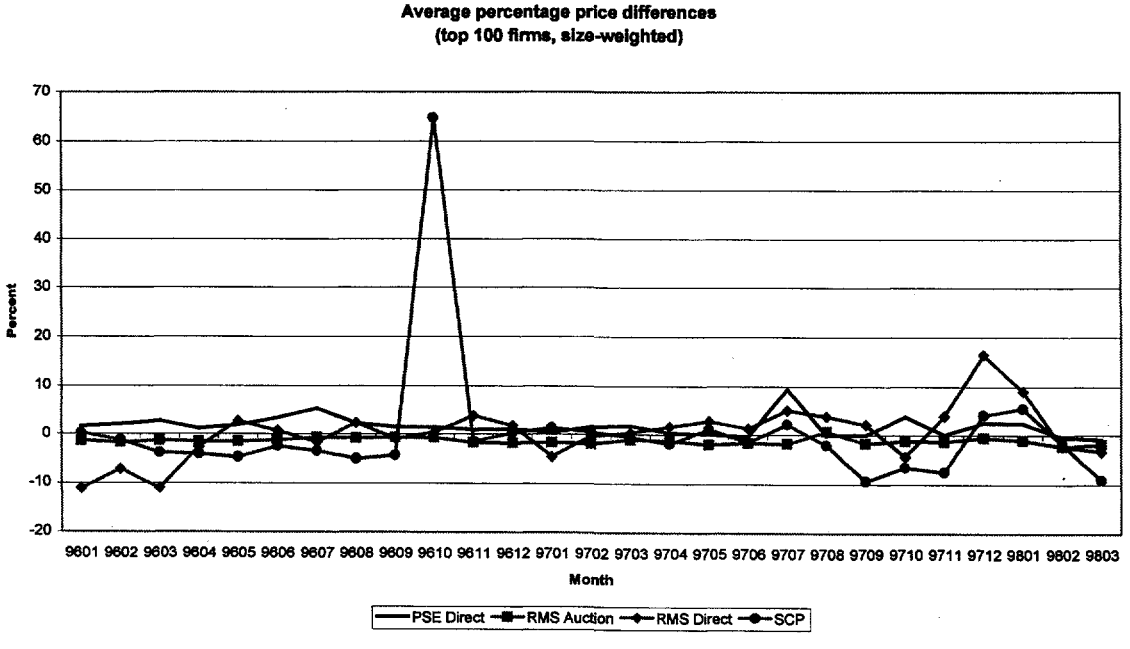
Estimates of the "diagonal" (own-lag) coefficients are again lower than 1 and support the previous evidence of decreasing price spreads over time. Lagged price spread observed in the PSE auction seems to be an important determinant of the price spreads in all three marketplaces.

TABLES AND GRAPHS

G.1 Average percentage price differences for top 100 firms

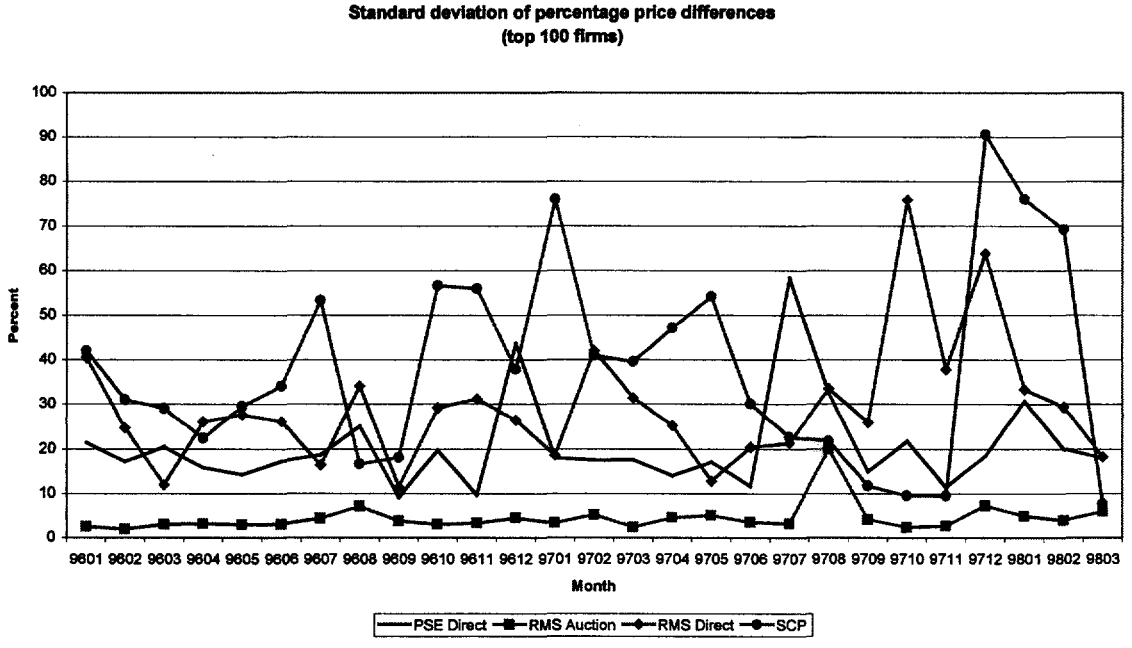


Source of raw data: Czech Securities Exchange Commission



Source of raw data: Czech Securities Exchange Commission

G.2 Standard deviation of percentage price differences for top 100 firms



Source of raw data: Czech Securities Exchange Commission

T.1 Summary of the tests of the equality of distributions of percentage price differences among marketplaces

	ALL	SIZE					TRADING FREQ.					MARKET SEGMENT					FIRMS/FUNDS	
	FIRMS	BIGGEST	2	3	4	SMALLEST	TRADED	2	3	4	NOT TRADED	A1	A2	B2	C2	C3	FIRMS	FUNDS
UNWEIGHTED	PSED	PSED	PSED	PSED	PSED	PSED	PSED	PSED	PSED	PSED		PSED	RMSD	PSED	PSED	PSED	PSED	PSED
	RMSD	RMSD	RMSD	SCP	RMSD	RMSD	RMSD	RMSD	RMSD	RMSD	RMSD	RMSA	PSED	RMSD	RMSD	RMSD	RMSD	RMSD
	SCP	SCP	RMSA	RMSD	SCP	RMSA	SCP	RMSA	RMSA	RMSA	SCP	RMSD	RMSA	SCP	RMSA	RMSA	SCP	RMSA
	RMSA	RMSA	SCP	RMSA	RMSA	SCP	RMSA	SCP	SCP	SCP	RMSA	SCP	SCP	RMSA	SCP	SCP	RMSA	SCP
WEIGHTED	PSED	PSED	PSED	PSED	PSED	PSED	PSED	PSED	PSED	PSED		PSED	PSED	PSED	PSED	PSED	PSED	PSED
	RMSD	RMSD	RMSD	RMSD	RMSD	RMSD	RMSD	RMSD	RMSD	RMSD	RMSD	RMSA	RMSD	RMSD	RMSD	RMSD	RMSD	RMSD
	RMSA	RMSA	RMSA	SCP	RMSA	RMSA	RMSA	SCP	RMSA	RMSA	SCP	RMSD	RMSA	SCP	RMSA	RMSA	SCP	RMSA
	SCP	SCP	SCP	RMSA	SCP	SCP	SCP	RMSA	SCP	SCP	RMSA	SCP	SCP	RMSA	SCP	SCP	RMSA	SCP

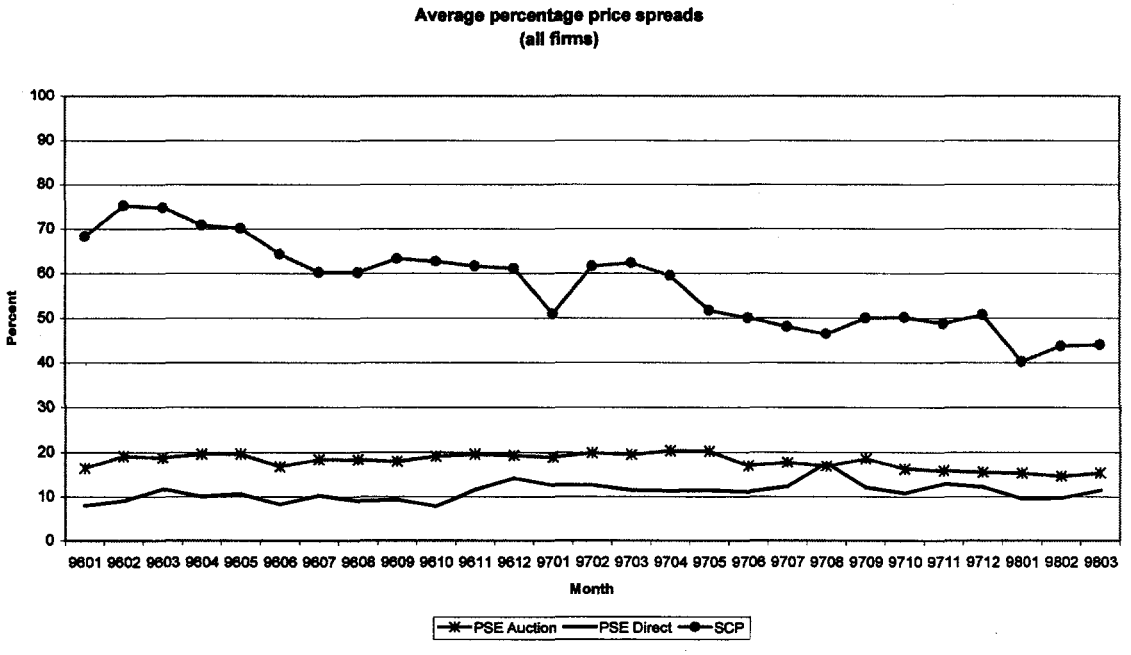
This table summarizes the results of the Wilcoxon and sign tests as reported in Table A.1 of the Appendix. Based on those tests, the percentage price differences of different marketplace against the PSE auction (PSED, RMSA, RMSD, SCP) were ranked. In each column, this rank is illustrated by the highest price difference being reported in the top row and the lowest price difference in the fourth row. The adjacent cells of pairs of variables where the difference was statistically significant at the 5% level according to the Wilcoxon or sign test are separated by a thick line. Of course, as the ranking was based on a one-to-one comparison of the four variables, the tests don't always provide a clear separation of variables into groups. A case-by-case decision on how to separate variables into groups was taken in those rare cases where ambiguity arose.
Source: Czech Securities Exchange Commission

T.2 Summary of the tests of declining price differences over time for individual firms

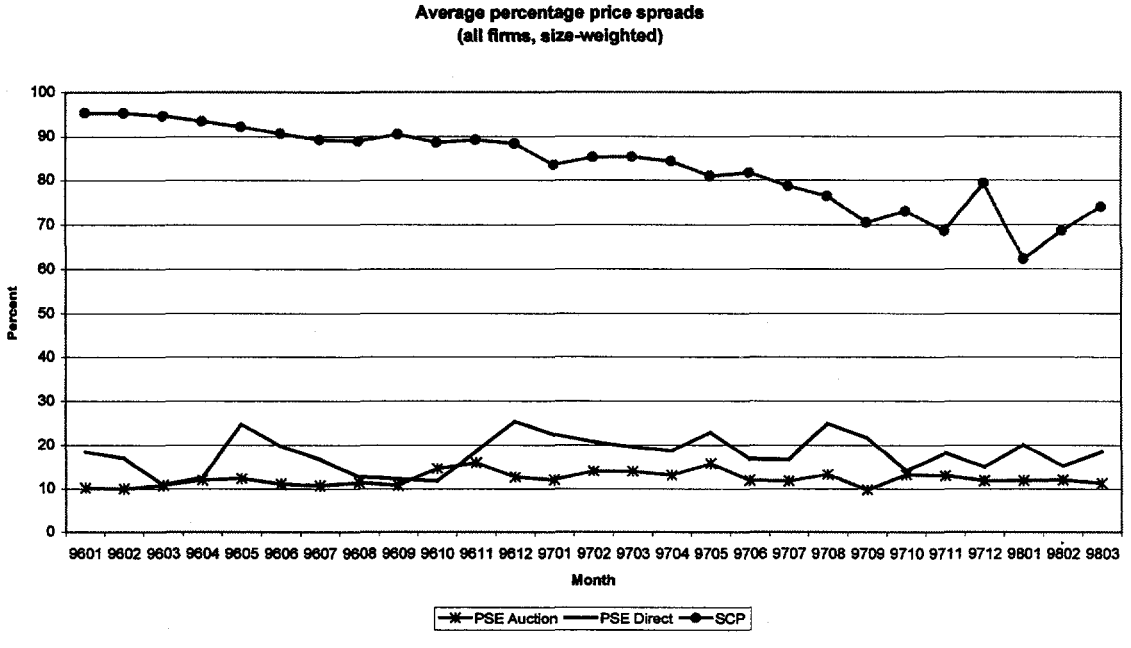
Time change	Significance level	PSE direct		RMS auction		RMS direct		SCP	
		Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)
Increase in the percentage price difference	1%	3	7	7	9	4	5	11	11
	5%	9	15	13	14	12	9	18	13
Decrease in the percentage price difference	5%	2	4	3	2	2	5	2	4
	1%	0	2	1	2	1	1	1	2

Each entry gives the number of firms (out of 100 top firms studied) where the null hypothesis of no time change in the percentage price differences is rejected by a given test.
Source: Czech Securities Exchange Commission

G.3 Average 'raw' percentage price spreads

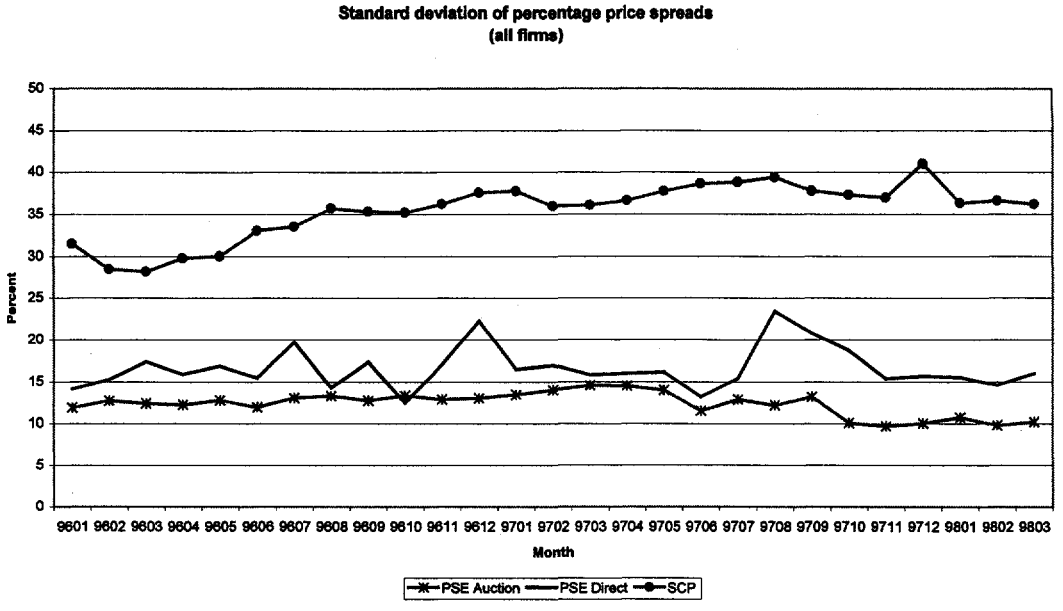


Source of raw data: Czech Securities Exchange Commission



Source of raw data: Czech Securities Exchange Commission

G.4 Standard deviation of 'raw' percentage price spreads



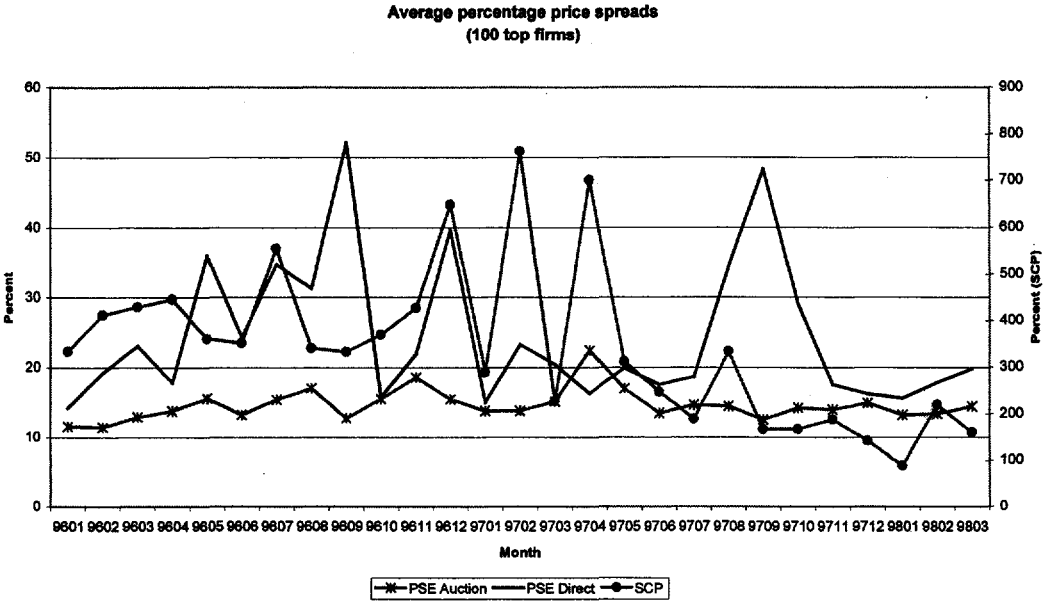
Source of raw data: Czech Securities Exchange Commission

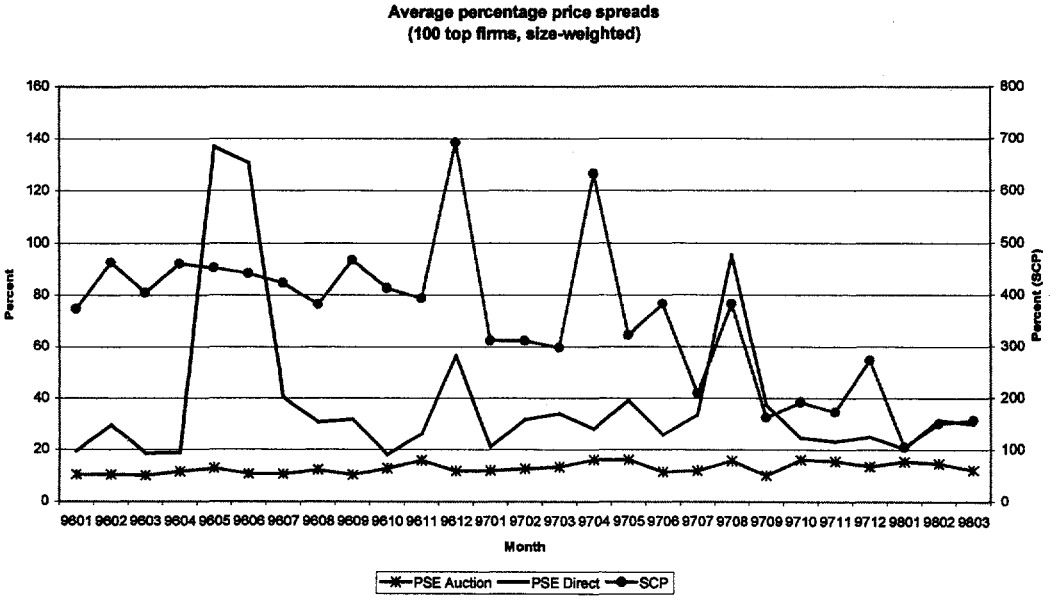
T.3 Summary of the tests of the equality of distributions of 'raw' percentage price spreads among marketplaces

	ALL	SIZE					TRADING FREQ.					MARKET SEGMENT					FIRMS/FUNDS	
	FIRMS	BIGGEST	2	3	4	SMALLEST	TRADED	2	3	4	NOT TRADED	A1	A2	B2	C2	C3	FIRMS	FUNDS
UNWEIGHTED	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP
	PSEA	PSEA	PSEA	PSEA	PSEA	PSEA	PSEA	PSEA	PSEA	PSEA	PSEA	PSED	PSED	PSEA	PSEA	PSEA	PSEA	PSEA
	PSED	PSED	PSED	PSED	PSED	PSED	PSED	PSED	PSED	PSED	PSED	PSEA	PSEA	PSED	PSED	PSED	PSED	PSED
WEIGHTED	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP
	PSED	PSED	PSEA	PSEA	PSEA	PSEA	PSED	PSEA	PSEA	PSEA	PSEA	PSED	PSED	PSEA	PSEA	PSEA	PSED	PSED
	PSEA	PSEA	PSED	PSED	PSED	PSED	PSEA	PSED	PSED	PSED	PSED	PSEA	PSEA	PSED	PSED	PSED	PSEA	PSEA

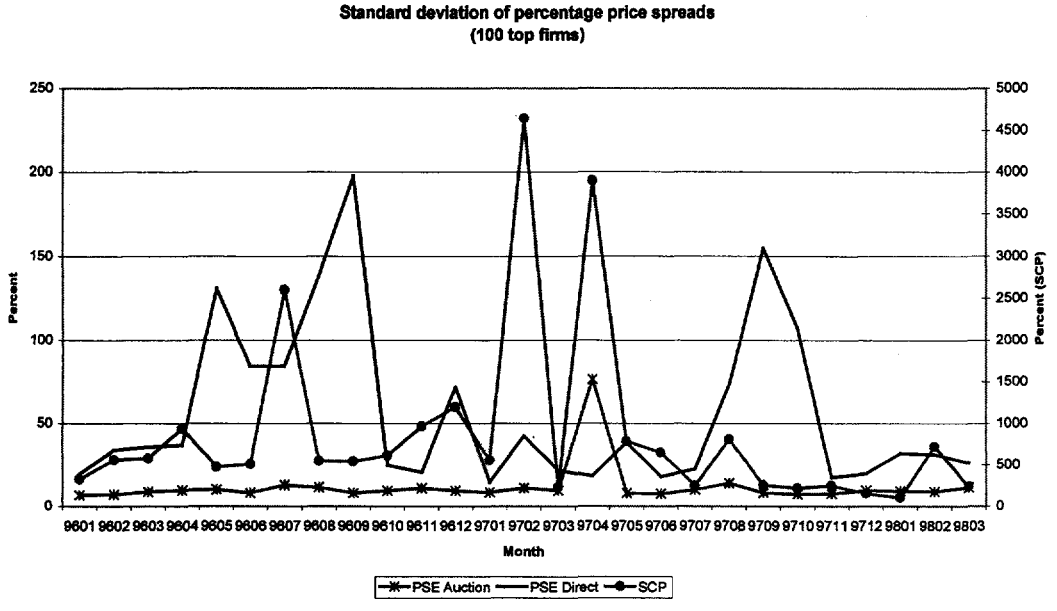
This table summarizes the results of the Wilcoxon and sign tests as reported in Table A.5 of the Appendix. Based on those tests, the 'raw' percentage price spreads in different marketplaces (PSEA, PSED, SCP) were ranked. In each column, this rank is illustrated by the highest price spread being reported in the top row and the lowest price spread in the third row. The adjacent cells of pairs of variables where the difference was statistically significant at the 5% level according to the Wilcoxon or sign test are separated by a thick line.
Source of data: Czech Securities Commission

G.5 Average percentage price spreads for 100 top firms





G.6 Standard deviation of percentage price spreads for 100 top firms



Source of raw data: Czech Securities Echange Commission

T.4 Summary of the tests of the equality of distributions of percentage price spreads for 100 top firms among marketplaces

	ALL	SIZE					TRADING FREQ.					MARKET SEGMENT					FIRMS/FUNDS	
	FIRMS	BIGGEST	2	3	4	SMALLEST	TRADED	2	3	4	NOT TRADED	A1	A2	B2	C2	C3	FIRMS	FUNDS
UNWEIGHTED	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	PSEA	SCP	SCP	SCP	SCP	SCP	SCP	SCP
	PSED	PSED	PSED	PSED	PSED	PSEA	PSED	PSEA	PSEA	PSEA	SCP	PSED	PSED	PSED	PSED	PSEA	PSED	PSED
	PSEA	PSEA	PSEA	PSEA	PSEA	PSED	PSEA	PSED	PSED	PSED	PSED	PSEA	PSEA	PSEA	PSEA	PSED	PSEA	PSEA
WEIGHTED	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	SCP	PSEA	SCP	SCP	SCP	SCP	SCP	SCP	SCP
	PSED	PSED	PSEA	PSED	PSEA	PSEA	PSED	PSEA	PSEA	PSEA	SCP	PSED	PSED	PSEA	PSED	PSEA	PSED	PSED
	PSEA	PSEA	PSED	PSEA	PSED	PSED	PSEA	PSED	PSED	PSED	PSED	PSEA	PSEA	PSED	PSEA	PSED	PSEA	PSEA

This table summarizes the results of the Wilcoxon and sign tests as reported in Table A.8 of the Appendix. Based on those tests, the percentage price spreads of 100 top firms in different marketplaces (PSEA, PSED, SCP) were ranked. In each column, this rank is illustrated by the highest price spread being reported in the top row and the lowest price spread in the third row. The adjacent cells of pairs of variables where the difference was statistically significant at the 5% level according to the Wilcoxon or sign test are separated by a thick line.
Source of data: Czech Securities Exchange Commission

T.5 Summary of the tests of declining price spreads over time for individual firms

Time change	Significance level	PSE auction		PSE direct		SCP	
		Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)
Increase in the percentage price difference	1%	3	6	2	3	0	0
	5%	8	12	8	5	0	0
Decrease in the percentage price difference	5%	8	6	10	12	69	56
	1%	1	4	3	5	45	45

Each entry gives the number of firms (out of 100 top firms studied) where the null hypothesis of no time change in the percentage price spreads is rejected by a given test.
Source: Czech Securities Exchange Commission

APPENDIX

A.1 Tests of the equality of distributions of percentage price differences among marketplaces

GROUPING: CATEGORY:	UNWEIGHTED DATA					WEIGHTED DATA				
ALL FIRMS										
	Kruskal-Wallis:	37.645**				Kruskal-Wallis:	28.073**			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct		-5.389HH	-2.309H	-3.464HH	PSE Direct		-5.004HH	-0.770	-3.464HH
	RMS Auction	6.306LL		2.309L	1.540	RMS Auction	6.064LL		1.540	0.000
	RMS Direct	2.448L	-3.209HH		-1.925	RMS Direct	0.943	-2.154HH		-2.694HH
	SCP	3.590LL	-2.085HH	1.237		SCP	3.815LL	0.770	1.808	
SIZE GROUPED BIGGEST										
	Kruskal-Wallis:	13.998**				Kruskal-Wallis:	14.085**			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct		-4.619HH	-0.385	-1.540	PSE Direct		-4.234HH	-0.770	-2.694HH
	RMS Auction	5.251LL		0.770	0.000	RMS Auction	4.403LL		0.770	-1.155
	RMS Direct	1.099	-1.237		-0.385	RMS Direct	1.427	-1.029		-1.155
	SCP	1.029	-1.029	0.009		SCP	2.604LL	1.168	0.926	
2ND										
	Kruskal-Wallis:	35.565**				Kruskal-Wallis:	38.482**			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct		-4.619HH	-1.540	-3.850HH	PSE Direct		-5.004HH	-1.540	-3.849HH
	RMS Auction	5.129LL		1.925	-2.309H	RMS Auction	5.389LL		1.925	-2.694HH
	RMS Direct	0.926	-2.638HH		-2.694HH	RMS Direct	0.614	-2.829HH		-2.694HH
	SCP	4.680LL	2.483L	3.434LL		SCP	4.714LL	2.673LL	3.745LL	
3RD										
	Kruskal-Wallis:	13.406**				Kruskal-Wallis:	12.846**			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct		-4.619HH	-0.770	-0.385	PSE Direct		-5.004HH	-0.385	-0.385
	RMS Auction	4.299LL		1.540	1.540	RMS Auction	4.386LL		1.155	1.155
	RMS Direct	0.839	-2.137H		-1.925	RMS Direct	0.926	-1.860		-1.540
	SCP	0.234	-2.067H	-0.061		SCP	0.164	-1.981H	-0.009	

GROUPING:	UNWEIGHTED DATA				WEIGHTED DATA				
4TH									
	Kruskal-Wallis:	28.364**			Kruskal-Wallis:	30.430**			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct		-4.619HH	-1.925	-3.850HH	PSE Direct		-5.389HH	-1.925	-4.234HH
	RMS Auction	5.579LL		0.770	0.385	RMS Auction	5.977LL		1.155	0.000
	RMS Direct	1.652	-1.964H		-1.925	RMS Direct	1.756	-2.483H		-1.540
	SCP	3.970LL	-0.112	2.067L		SCP	3.659LL	0.268	2.102L	
LOWEST										
	Kruskal-Wallis:	29.305**				Kruskal-Wallis:	29.758**			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct		-5.389HH	-3.464HH	-2.309H	PSE Direct		-5.389HH	-3.849HH	-3.079HH
	RMS Auction	6.133LL		0.770	-0.770	RMS Auction	6.271LL		-0.385	-0.770
	RMS Direct	3.849LL	-1.272		-1.925	RMS Direct	3.728LL	-0.355		-1.155
	SCP	2.863LL	0.753	0.874		SCP	3.105LL	0.856	1.116	
TRADING FREQ. TRADED										
	Kruskal-Wallis:	34.000**				Kruskal-Wallis:	27.290**			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct		-5.389HH	-1.540	-3.079HH	PSE Direct		-5.004HH	-0.770	-3.464HH
	RMS Auction	6.219LL		2.694LL	1.925	RMS Auction	5.891LL		1.540	-0.770
	RMS Direct	1.099	-3.209HH		-2.309H	RMS Direct	0.908	-2.500H		-2.694HH
	SCP	2.759LL	-3.088HH	1.150		SCP	3.607LL	0.614	1.791	
2ND										
	Kruskal-Wallis:	19.650**				Kruskal-Wallis:	12.867**			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct		-5.389HH	-3.079HH	-1.925	PSE Direct		-4.619HH	-1.925	-3.464HH
	RMS Auction	5.372LL		0.385	-0.770	RMS Auction	4.022LL		0.770	0.000
	RMS Direct	2.811LL	-0.683		-0.770	RMS Direct	1.358	-1.496		-1.155
	SCP	2.258L	0.078	0.631		SCP	2.223L	-0.182	1.133	
3RD										
	Kruskal-Wallis:	21.511**				Kruskal-Wallis:	20.556**			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct		-1.650	-1.179	-2.593HH	PSE Direct		-1.650	-0.707	-1.650
	RMS Auction	1.761		1.155	-3.464HH	RMS Auction	1.807		1.155	-3.464HH
	RMS Direct	1.146	-1.370		-2.942HH	RMS Direct	0.286	-2.509H		-2.942HH

	SCP	2.386L	4.109LL	3.985LL		SCP	2.085L	3.918LL	3.772LL	
GROUPING:	**UNWEIGHTED DATA**					**WEIGHTED DATA**				
4TH										
	Kruskal-Wallis:	47.060**				Kruskal-Wallis:	48.183**			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct		-4.129HH	-4.129HH	-4.129HH	PSE Direct		-4.129HH	-3.212HH	-4.129HH
	RMS Auction	5.254LL		1.155	-3.079HH	RMS Auction	5.522LL		1.155	-2.694HH
	RMS Direct	4.607LL	-1.220		-2.694HH	RMS Direct	3.714LL	-1.150		-2.694HH
	SCP	5.588LL	3.486LL	2.794LL		SCP	5.499LL	3.694LL	3.676LL	
NOT TRADED										
	Kruskal-Wallis:	6.617*				Kruskal-Wallis:	6.617*			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct					PSE Direct				
	RMS Auction			-2.667HH	1.333	RMS Auction			-2.667HH	1.333
	RMS Direct		-1.567		-2.000HH	RMS Direct		-1.567		-2.000HH
	SCP		-2.061H	1.604		SCP		-2.061H	1.604	
MARKET SEGMENT										
A1										
	Kruskal-Wallis:	17.575**				Kruskal-Wallis:	15.497**			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct		-1.925	-2.694HH	-3.849HH	PSE Direct		-1.155	-1.155	-3.079HH
	RMS Auction	1.860		-2.309H	-3.079HH	RMS Auction	0.977		-0.385	-3.464HH
	RMS Direct	2.448L	2.465L		-1.155	RMS Direct	1.306	0.753		-1.540
	SCP	3.105LL	3.261LL	0.977		SCP	3.521LL	3.901LL	1.237	
A2										
	Kruskal-Wallis:	26.939**				Kruskal-Wallis:	26.769**			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct		-5.004HH	0.000	-1.925	PSE Direct		-5.004HH	-0.385	-1.540
	RMS Auction	5.648LL		3.464LL	-0.770	RMS Auction	5.821LL		2.694LL	0.000
	RMS Direct	-0.303	-4.334HH		-1.540	RMS Direct	0.182	-4.143HH		-2.309H
	SCP	1.981L	-0.407	1.756		SCP	2.137L	0.043	1.721	
B2										
	Kruskal-Wallis:	24.405**				Kruskal-Wallis:	18.574**			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct		-4.234HH	-2.694HH	-2.309H	PSE Direct		-5.004HH	-3.079HH	-1.925
	RMS Auction	5.147LL		1.540	0.385	RMS Auction	5.320LL		0.385	0.000

	RMS Direct	3.296LL	-1.791		0.385	RMS Direct	2.915LL	-1.081		-1.155
	SCP	2.863LL	-0.597	0.562		SCP	1.635	-0.285	0.078	
GROUPING:	**UNWEIGHTED DATA**					**WEIGHTED DATA**				
C2										
	Kruskal-Wallis:	29.974**				Kruskal-Wallis:	35.071**			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct		-5.389HH	-1.925	-2.694HH	PSE Direct		-5.004HH	-1.155	-3.464HH
	RMS Auction	6.064LL		2.694LL	-0.385	RMS Auction	5.821LL		3.079LL	-1.540
	RMS Direct	1.912	-4.005HH		-1.155	RMS Direct	-0.009	-4.316HH		-2.309H
	SCP	2.361L	-0.147	1.479		SCP	3.365LL	1.064	3.088LL	
C3										
	Kruskal-Wallis:	14.120**				Kruskal-Wallis:	26.305**			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct		-2.309H	0.000	-2.309H	PSE Direct		-2.309H	-1.155	-2.309H
	RMS Auction	2.800LL		-1.540	-2.694HH	RMS Auction	2.731LL		-1.925	-4.619HH
	RMS Direct	2.170L	-0.807		-1.940	RMS Direct	2.488L	-0.542		-1.455
	SCP	2.523L	2.327L	2.230L		SCP	2.662LL	4.282LL	3.170LL	
FIRMS/FUNDS										
FIRMS										
	Kruskal-Wallis:	40.009**				Kruskal-Wallis:	28.668**			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct		-5.389HH	-2.309H	-2.694HH	PSE Direct		-5.389HH	-1.540	-2.694HH
	RMS Auction	6.306LL		2.309L	1.925	RMS Auction	6.289LL		1.155	0.385
	RMS Direct	2.950LL	-3.382HH		-1.155	RMS Direct	1.635	-1.635		-2.694HH
	SCP	3.572LL	-2.361H	1.064		SCP	3.659LL	-0.251	1.496	
FUNDS										
	Kruskal-Wallis:	7.581*				Kruskal-Wallis:	10.328*			
		PSE Direct	RMS Auction	RMS Direct	SCP		PSE Direct	RMS Auction	RMS Direct	SCP
	PSE Direct		-2.309H	-0.770	-2.309H	PSE Direct		-2.309H	-0.385	-2.309H
	RMS Auction	2.552L		0.000	-1.540	RMS Auction	2.015L		-0.385	-2.309H
	RMS Direct	0.649	-0.822		-2.309H	RMS Direct	0.337	-0.389		-2.309H
	SCP	2.137L	1.081	1.600		SCP	2.673LL	2.344L	2.171L	

* and ** denote significance of the Kruskal-Wallis test statistic at 5% and 1% significance level, respectively.
Wilcoxon test \ sign test results are reported below \ above the diagonal in the tables. In the tables of Wilcoxon test \ sign test statistics, L or LL (H or HH) denote the situation where the 'row' percentage price difference is at 5% or 1% significance level lower (higher) than the 'column' percentage price difference.
Source: Czech Securities Exchange Commission

A.2 Tests of declining price differences over time for individual firms

ISIN	NAME	PSE direct		RMS auction		RMS direct		SCP	
		Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)
CS0008441952	CEZ A.S.	-0.291	-0.877	0.000	-0.502	-0.825	1.647	1.456	0.616
CZ0008019106	KOMERCNÍ BANKA, A.S.	-0.873	-0.843	-2.281H	-2.271H	0.194	-0.188	2.135L	1.941
CZ0008023801	CESKÁ SPORITELNA A.S.	0.873	-0.541	-1.262	-1.989H	-1.698	-0.963	0.922	2.118L
CZ0008002854	INVESTICNÍ A POŠTOVNÍ BANKA A.S	-2.281H	-2.663HH	-2.960HH	-1.987H	-2.038H	-2.761HH	-0.146	-0.175
CS0008418869	TABÁK A.S.	0.243	-0.184	-0.825	-0.937	-0.435	-1.173	-0.485	-0.673
CS0008420964	COKOLÁDOVNY PRAHA, A.S.	0.873	0.930	-1.165	-0.967	1.698	2.247L	1.310	2.440L
CZ0008026705	SPORITELNÍ PRIVATIZACNÍ-CESKÝ IF, A.S.	-1.650	-2.473H	-1.650	-0.627	-1.601	0.388	-2.960HH	-3.613HH
CZ0008012804	IPF KOMERCNÍ BANKY, A.S.	-1.019	-0.676	1.359	-0.117	-1.553	0.082	-2.912HH	-2.546HH
CS0005041250	ŠKODA A.S.	-0.291	-1.041	-1.456	-1.453	-0.582	-0.416	-0.534	-0.090
CZ0005078352	SEVEROMORAVSKÁ ENERGETIKA A.S.	0.739	-1.386	-3.639HH	-5.336HH	-0.873	-0.365	0.000	0.658
CS0005012954	ASSIDOMAN SEPAP A.S.	1.259	0.906	0.873	0.019	0.437	-0.789	1.553	1.043
CS0005017953	BIOCEL PASKOV A.S.	2.475L	3.979LL	0.000	0.247	-0.077	-2.158H	0.194	1.391
CZ0005078154	PRAZSKÁ ENERGETIKA A.S.	0.213	-0.634	-0.922	-0.265	0.566	1.052	-0.534	-0.835
CS0008001509	RESTITUCNÍ INV.FOND CESKÉ REPUBLIKY AS	-2.135H	-2.063H	0.631	1.220	-1.747	-0.725	0.000	0.006
CZ0009054656	CESKÉ RADIOKOMUNIKACE A.S.	0.000	0.169	-1.990H	-2.655HH	-0.340	-1.079	-2.329H	-1.302
CZ0009086708	HARVARDSKÝ PRUMYSLOVÝ HOLDING v likvid	0.819	-0.212	0.507	-0.473	-0.169	0.442	-1.859	-1.295
CZ0005077958	JIHOMORAVSKÁ ENERGETIKA A.S	1.169	1.209	1.262	-0.544	-0.049	0.855	-0.388	-0.207
CZ0005091959	SYNTHESIA, A.S.	0.534	-0.003	-2.815HH	-2.518H	-1.553	-1.456	-1.407	-2.708HH
CS0008447850	ELEKTRÁRNY OPATOVICE A.S.	-1.553	-1.171	-0.776	-0.262	-1.974H	-3.292HH	-1.601	-0.271
CS0009027966	ELEKTRÁRNY OPATOVICE A.S.								
CZ0008003704	PRIVATIZACNÍ INVESTICNÍ FOND,A.S.	-1.456	-3.705HH	-1.359	-1.393	-0.291	-1.271	-2.038H	-2.879HH
CZ0005104752	LÉCIVA PRAHA A.S.	-3.009HH	-3.266HH	-1.019	-1.757	-0.728	-0.268	-1.553	0.224
CZ0008002755	CESKÁ POJIŠtOVNA A.S.	-0.124	-0.386	-0.194	-0.469	-1.790	-4.046HH	-1.941	-2.622HH
CZ0005098251	NOVÁ HUT A.S.	0.582	1.051	-0.631	-0.365	0.146	1.156	-1.359	-2.160H
CS0008439659	PRAZSKÁ TEPLÁRENSKÁ A.S.	-0.905	-1.165	-1.893	-1.610	-1.974H	-1.794	0.194	-1.161
CZ0008002557	ZIVNOSTENSKÁ BANKA A.S.	-1.385	1.372	-1.019	-1.796	-0.582	-0.693	2.717LL	0.618
CS0008464350	PIVOVAR RADEGAST A.S.	-1.130	-1.937	-0.922	0.376	-0.485	-1.995	-2.087H	-0.366
CZ0005110155	INZENÝRSKÉ A PRUMYSLOVÉ STAVBY A.S.	-1.359	-0.402	0.113	-1.104	1.019	0.787	0.838	1.285
CZ0005102350	SEVEROCESKÉ DOLY A.S.	0.340	-1.194	-0.146	0.459	1.407	2.151L	-0.243	-0.563
CZ0008026606	SPORITELNÍ PRIVATIZACNÍ-VÝNOSOVÝ IF	-0.388	-0.001	-1.068	-0.628	-2.912HH	0.203	-2.766HH	-0.400
CS0008416251	PODNIK VÝPOCETNÍ TECHNIKY A.S.	-0.362	-0.015	-0.971	-0.504	-2.067H	-2.160H	-1.262	-0.671
CZ0005078253	STREDOCESKÁ ENERGETICKÁ A.S.	0.843	0.744	-1.893	-1.910	-0.971	-2.465H	-1.747	-0.846

ISIN	NAME	PSE direct		RMS auction		RMS direct		SCP	
		Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)
CS0005020957	VODNÍ STAVBY PRAHA A.S.	-2.573H	-2.296H	-1.310	-0.622	-2.815HH	-1.299	-0.097	-0.026
CZ0005076950	VÝCHODOCESKÁ ENERGETIKA A.S.	0.154	-0.602	-2.863HH	-1.448	-1.362	0.719	-1.795	-1.409
CZ0005078055	SEVEROCESKÁ ENERGETIKA A.S.	-3.101HH	-3.583HH	1.893	0.979	-0.873	-1.128	-1.068	-0.840
CZ0005084459	SEVEROMORAVSKÁ PLYNÁRENSKÁ A.S.	-1.571	-1.632	-1.941	-1.620	-1.338	-1.014	-0.534	0.142
CZ0005077354	ZÁPADOCESKÁ ENERGETIKA A.S.	1.470	1.627	-2.912HH	-3.919HH	-1.795	0.589	-1.990H	-1.324
CZ0008026507	SPORITELNÍ PRIVATIZACNÍ-VŠEOBECNÝ IFAS	-0.527	-0.504	-2.087H	-2.979HH	-1.407	0.044	-2.717HH	-1.770
CS0008414751	VERTEX A.S.	-2.021	-0.103	0.194	0.854	0.712	0.563	0.388	-0.064
CS0008414058	DEZA A.S.	0.388	-0.228	-0.097	-1.103	0.728	1.137	-1.359	0.125
CS0008433652	MORAVSKOSLEZSKÉ TEPLÁRNY A.S.	-0.448	-0.423	0.922	0.934	-0.340	-0.398	-3.057HH	-3.295HH
CZ0009084505	PPF INVESTICNÍ HOLDING A.S.	0.886	1.001	0.175	-0.565	0.877	1.427	-0.263	-1.035
CS0005004357	ZÁVODY PRESNÉHO STROJÍRENSTVÍ ZLÍN A.S	-0.937	-1.080	0.679	1.685	-1.116	-1.691	-2.378HH	0.031
CS0005010552	TRINECKÉ ZELEZÁRNY A.S.	1.268	0.447	-2.329H	-1.186	2.087L	0.277	0.679	1.872
CS0008424958	SPOLANA A.S.	0.192	2.075L	-0.776	-0.567	0.631	0.711	-0.388	-0.331
CS0008412854	BVV A.S.	2.079L	1.776	1.068	-0.018	0.435	0.854	-2.329HH	-0.843
CS0008465050	KERAMIKA HORNÍ BRÍZA A.S.	1.540	2.163L	-0.949	-1.243	-2.333H	-2.898HH	-0.128	1.416
CZ0008011509	RENTIERSKÝ INVESTICNÍ FOND 1.IN A.S.	0.357	1.398	-1.601	-2.676HH	1.407	0.482	-2.329HH	-0.735
CZ0005104950	CEZ A.S.	0.146	-0.507	-3.397HH	-3.806HH	-1.116	-1.281	-0.097	0.112
CZ0005077057	JIHOCESKÁ ENERGETIKA A.S.	0.849	-0.484	0.728	0.603	-1.410	-1.912	0.485	1.650
CZ0008007903	ZIVNOBANKA-1. IF, A.S.	0.154	-0.489	0.669	-0.269	-2.006H	-1.933	-2.777HH	-2.116H
CS0008443958	CHLUMCANSKÉ KERAMICKÉ ZÁVODY A.S.	-0.898	0.131	-3.348HH	-2.735HH	-0.782	0.972	-0.340	-0.498
CZ0005100057	MOSTECKÁ UHELNÁ SPOLECNOST A.S	-0.462	-2.168H	-1.387	-1.711	-0.092	-0.641	0.277	0.615
CZ0005100164	MOSTECKÁ UHELNÁ SPOLECNOST A.S	0.735	1.455						
CZ0005111054	PRAZSKÉ PIVOVARY A.S.	-3.372HH	-3.038HH		1.792		-0.276		0.086
CS0005006667	CEMENTÁRNY A VÁPENKY MOKRÁ A.S.	-0.586	-1.554	0.728	-0.032	-0.981	-1.113	-1.213	-2.631HH
CZ0008011301	IF BOHATSTVÍ, A.S.	-1.846	-2.091H	0.000	-0.380	-0.146	0.187	-1.407	-1.237
CZ0008460052	SETUZA A.S.	-2.350H	-2.494H	-0.873	-1.616	-2.281H	-1.943	-3.057HH	-1.517
CZ0005096859	GALENA A.S.	-2.232H	-2.378H	-0.049	-0.731	0.291	1.673	-0.534	0.246
CZ0005103952	SOKOLOVSKÁ UHELNÁ A.S.	0.590	0.961	0.097	1.166	-0.534	-0.898	-0.194	0.105
CS0005022854	STAVBY SILNIC A ZELEZNIC A.S.	-0.309	-0.795	0.291	0.486	-1.795	-1.108	-2.669HH	-3.708HH
CZ0005100651	OKD A.S.	1.188	2.457L	1.116	1.539	1.407	1.244	1.213	1.211
CS0008418752	RAKOVNICKÉ KERAMICKÉ ZÁVODY, A.S.	-0.108	-1.675	-1.068	-2.889HH	-3.209HH	-2.024H	-2.184H	-3.555HH
CZ0005078956	JIHOMORAVSKÁ PLYNÁRENSKÁ A.S.	-1.868	-1.906	0.388	0.523	0.282	-0.923	0.485	0.561
CZ0005006502	METROSTAV A.S.	0.388	0.418		-0.769				0.063
CS0008443057	TMP-TELEKOM.MONTÁZE PRAHA A.S.	-0.328	0.895	-0.922	-1.372	-0.436	0.377	-0.146	-0.176
CZ0005092551	VÝCHODOCESKÁ PLYNÁRENSKÁ A.S.	-1.714	-2.140H	1.359	0.788	0.493	0.743	0.049	0.056
CZ0005005850	JIHOCESKÉ PAPÍRNY A.S. VETRNÍ	-1.405	-1.456	-0.434	-1.402	-0.797	-1.427	0.501	-0.601

ISIN	NAME	PSE direct		RMS auction		RMS direct		SCP	
		Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)
CZ0005092452	SEVEROCESKÁ PLYNÁRENSKÁ A.S.	1.225	0.229	-0.291	-1.213	-0.308	-1.411	0.291	0.015
CZ0008025707	2.SPORITELNÍ PRIVATIZACNÍ IF A.S.	1.068	1.132	0.825	2.090L	1.165	1.961L	-2.378H	-0.289
CS0008449658	MORAVSKÉ NAFTOVÉ DOLY A.S.	-0.293	-0.100	-1.359	-0.145	-0.427	-1.167	-0.485	0.893
CZ0005084350	PRAZSKÁ PLYNÁRENSKÁ A.S.	-0.447	-0.557	2.184L	2.821LL	1.477	1.969L	0.340	1.317
CS0008458659	PRVNÍ SEVEROZÁPADNÍ TEPLÁRENSKÁ A.S.	-0.494	-1.229	-2.281H	-1.218	-0.615	-1.557	-1.698	-3.392HH
CS0005029156	CESKÁ ZBROJOVKA A.S.	0.586	2.576LL	0.825	-0.571	0.679	0.946	0.388	0.821
CZ0005078758	ZÁPADOCESKÁ PLYNÁRENSKÁ A.S.	-0.447	-0.561	0.291	-0.952	-0.423	-1.424	-1.553	-1.708
CZ0008418001	FINOP HOLDING A.S.	1.323	0.111		1.528		1.627		-0.234
CZ0008444254	PLZENSKÝ PRAZDROJ, A.S.	1.388	1.015	-1.844	-2.729HH	-0.049	0.125	-1.068	0.367
CS0005002765	CKD PRAHA HOLDING A.S.	0.846	0.603	-0.971	0.356	0.146	1.781	1.407	2.591LL
CS0008458550	SEVEROCESKÉ TEPLÁRNY A.S.	-0.742	-0.230	-0.437	-0.003	0.956	1.096	-0.097	-0.115
CS0005026152	JUTA A.S.	0.122	-0.086	-0.922	-1.989H	-2.594HH	-3.356HH	-2.135H	-3.009HH
CZ0008418951	CÍZKOVICKÁ CEMENTÁRNA A.S.	-0.655	1.320	3.300LL	2.877LL	0.330	0.819	-1.407	-1.332
CZ0005078659	STREDOCESKÁ PLYNÁRENSKÁ, A.S.	0.000	-0.575	1.213	1.282	1.861	1.194	-0.437	1.138
CZ0005098558	VÍTKOVICE A.S.	-0.614	-0.363	0.485	-0.199	-0.340	-1.029	-1.213	-1.767
CZ0008011004	KRIŠTÁLOVÝ IF A.S.	1.747	0.553	-0.049	0.081	0.485	-0.096	0.049	0.380
CZ0009062154	SEVEROCESKÉ VODOVODY A KANALIZACE A.S.	0.000	-0.037	0.243	-0.114	0.582	0.356	-0.485	-0.680
CZ0008436151	HOTEL INTER.CONTINENTAL PRAHA A.S.	1.886	0.715	-0.437	-0.847	0.554	0.552	-0.049	0.383
CS0005020759	DAEWOO AVIA A.S.	1.488	0.468	-2.523H	-1.520	2.641LL	2.624LL	-0.146	1.168
CZ0005078857	JIHOCESKÁ PLYNÁRENSKÁ A.S.	-1.549	-2.921HH	-0.679	-0.756	-0.293	-1.059	-1.698	0.019
CZ0005104356	GRAMOFONOVÉ ZÁVODY A.S.	0.480	0.058	0.922	-0.167	-0.033	0.412	-0.922	0.311
CS0009029764	ORTAS A.S.								
CZ0009049953	PRAMEN IK A.S.			-0.735	-1.329			1.868	4.488LL
CZ0009078804	LE CYGNE SPORTIF GROUP A.S.								
CZ0008025509	ZLATÝ INVESTICNÍ FOND KVANTO, A.S.	0.000	0.262	1.612	0.598	-1.364	-1.378	1.612	0.902
CZ0005108209	CEMENT BOHEMIA PRAHA, A.S.		-0.725	2.115L	1.712	1.268	-0.443	1.825	0.809
CZ0008025004	UNION BANKA, A.S.			1.000				-1.000	
CZ0008030509	CESKOMORAVSKÁ HYPOTECNÍ BANKA A.S.								
CZ0009091500	UNIPETROL a.s.		0.781		-1.061		0.390		1.456
CZ0009092201	BANKOVNÍ HOLDING A.S.	-2.000H	-3.615HH						
CZ0005106104	KORAMO, A.S.								
CZ0009080602	CHEMAPOL GROUP A.S.		-0.967	0.000	-0.696	-2.208H	-0.441	0.655	0.600

Source: Czech Securities Commission

A.3 Tests of declining price differences over time for groups of firms

GROUPING:		UNWEIGHTED DATA		WEIGHTED DATA	
CATEGORY:		Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)
ALL AVERAGED					
	PSE Direct	2.329L	2.303L	1.553	0.587
	RMS	-1.068	-0.562	-0.388	-0.646
	Auction				
	RMS Direct	0.485	-0.738	-0.825	-0.174
	SCP	-0.971	-2.594H	-0.873	0.082
SIZE GROUPED					
BIGGEST					
	PSE Direct	0.922	0.251	-0.194	-0.283
	RMS	-1.165	-1.326	0.485	-0.594
	Auction				
	RMS Direct	-0.340	-0.223	-0.340	0.423
	SCP	-1.893	-3.407HH	-0.097	0.256
2ND					
	PSE Direct	-0.194	-0.733	-0.194	-0.554
	RMS	-1.990H	-1.968H	-2.717HH	-2.716H
	Auction				
	RMS Direct	-1.456	-1.152	-1.747	-1.627
	SCP	-1.456	-1.924	-1.601	-2.205H
3RD					
	PSE Direct	2.815LL	2.119L	2.717HH	2.196L
	RMS	-1.650	-1.716	-1.359	-1.914
	Auction				
	RMS Direct	1.601	0.513	1.359	0.293
	SCP	-0.728	-1.575	-0.922	-2.036H
4TH					
	PSE Direct	2.281L	-0.125	2.426L	-0.081
	RMS	0.146	1.291	-0.194	0.530
	Auction				
	RMS Direct	-1.359	-2.555H	-1.893	-2.929HH
	SCP	-1.844	-4.359HH	-1.893	-4.625HH
SMALLEST					
	PSE Direct	1.262	1.401	1.941	2.648L
	RMS	-1.504	-1.393	-1.213	-1.738
	Auction				
	RMS Direct	1.504	1.540	1.213	0.916
	SCP	-1.698	-0.391	-1.553	-1.563
TRADING FREQ.					
TRADED					
	PSE Direct	2.475L	1.937	1.068	0.322
	RMS	-1.262	-1.209	-0.534	-0.902
	Auction				
	RMS Direct	0.243	-1.058	-0.971	-0.065
	SCP	-0.243	-2.111H	-0.437	0.110
2ND					

	PSE Direct	0.437	-0.799	0.243	-0.539
	RMS	-1.456	-1.740	-1.068	-1.862
	Auction				
	RMS Direct	-1.019	-0.368	-1.310	-1.063
	SCP	0.243	0.174	-1.068	-0.936
3RD					
	PSE Direct	-1.777	-1.069	-2.132H	-1.568
	RMS	1.359	0.479	0.873	0.045
	Auction				
	RMS Direct	-1.000	-2.029	-0.333	-1.012
	SCP	-1.310	-1.176	-0.776	-0.517
4TH					
	PSE Direct	1.306	0.606	2.449L	0.940
	RMS	0.243	0.230	0.825	0.760
	Auction				
	RMS Direct	0.243	0.792	0.097	-1.082
	SCP	-2.863HH	-1.810	-2.426H	-1.432
GROUPING:		**UNWEIGHTED DATA**		**WEIGHTED DATA**	
CATEGORY:		Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)
NOT TRADED					
	PSE Direct				
	RMS	-0.735	-1.409	-0.735	-1.409
	Auction				
	RMS Direct				
	SCP	1.868	4.731LL	1.868	4.731LL
MARKET SEGMENT					
A1					
	PSE Direct	-1.359	-0.882	-1.795	-1.195
	RMS	0.971	-0.212	1.068	-0.486
	Auction				
	RMS Direct	1.407	0.792	0.582	0.780
	SCP	0.922	0.782	2.281L	0.755
A2					
	PSE Direct	1.795	0.803	2.329L	1.708
	RMS	-1.553	-1.205	-2.038H	-1.757
	Auction				
	RMS Direct	0.049	-0.411	-0.922	-0.824
	SCP	-3.300HH	-4.616HH	-2.475H	-4.227HH
B2					
	PSE Direct	1.893	0.173	0.873	1.195
	RMS	-2.087H	-0.826	-2.329H	-1.294
	Auction				
	RMS Direct	1.504	0.360	0.534	-0.096
	SCP	-1.262	-2.696H	-1.068	-2.480H
C2					
	PSE Direct	0.873	0.831	1.553	1.111
	RMS	0.146	-0.694	-2.038H	-1.178
	Auction				
	RMS Direct	-0.679	-1.676	-0.728	-1.669

	SCP	0.000	0.055	-2.038H	-4.585HH
C3					
	PSE Direct	0.000	0.479	0.000	0.479
	RMS	0.194	-0.750	0.243	-0.116
	Auction				
	RMS Direct	1.171	1.165	0.390	-0.003
	SCP	-0.243	-0.287	-0.485	-0.677
FIRMS/FUNDS					
FIRMS					
	PSE Direct	1.747	1.621	2.281L	1.529
	RMS	-1.601	-1.125	-0.873	-0.817
	Auction				
	RMS Direct	-1.068	-1.228	-0.485	-0.287
	SCP	-1.165	-2.287H	-0.679	0.138
FUNDS					
	PSE Direct	-0.437	-1.020	0.194	-0.823
	RMS	-1.359	-1.230	-1.844	-1.047
	Auction				
	RMS Direct	0.873	0.487	-0.485	-0.113
	SCP	-1.893	-3.717HH	-2.620HH	-5.670HH

Source: Czech Securities Exchange Commission

A.4 VAR models of price differences

GROUPING:	UNWEIGHTED DATA					WEIGHTED DATA				
CATEGORY:	PSE Direct (-1)	RMS Auction (-1)	RMS Direct (-1)	SCP (-1)	Block Exogeneity (F-test)	PSE Direct (-1)	RMS Auction (-1)	RMS Direct (-1)	SCP (-1)	Block Exogeneity (F-test)
ALL AVERAGED										
PSE Direct	0.192	-1.413**	0.067	0.082	3.725*	-0.033	-1.164**	0.030	-0.012	2.987
RMS Auction	-0.041	0.824**	-0.030	-0.009	0.744	0.098	0.957**	-0.011	-0.016	1.117
RMS Direct	-0.632	-1.907*	0.324	-0.149	2.059	0.148	0.027	0.477**	0.017	0.077
SCP	0.065	0.255	-0.068	0.476*	0.096	0.005	0.437	0.143	-0.041	0.043
SIZE GROUPED										
BIGGEST										
PSE Direct	0.011	-0.995	0.127	-0.089	1.348	-0.092	-1.006	0.045	-0.015	0.948
RMS Auction	0.187*	0.355	-0.023	-0.026	1.970	0.145*	0.609**	0.027	-0.011	2.394
RMS Direct	0.171	-0.188	0.385*	-0.046	0.243	0.311	1.194	0.374*	0.003	0.590
SCP	-0.186	-1.730	0.839**	0.149	4.508*	0.093	-0.809	0.357	-0.057	0.086
2ND										
PSE Direct	0.045	-0.835*	0.009	0.044	3.292*	-0.027	-0.735**	0.032	0.028	3.846*
RMS Auction	-0.042	0.769**	-0.020	0.035	0.770	-0.055	0.751**	-0.023	0.035	0.819
RMS Direct	0.651	-1.605*	0.438*	0.453	2.156	0.442	-1.646*	0.495*	0.406	1.849
SCP	-0.206	1.145*	-0.095	0.342	1.823	-0.189	1.012	-0.131	0.399*	1.740
3RD										
PSE Direct	0.292	-0.686	0.029	0.113	0.654	0.350	-0.506	-0.012	0.121	0.484
RMS Auction	-0.044	0.861**	0.028	-0.014	0.927	-0.032	0.870**	0.018	-0.017	0.342
RMS Direct	0.379	-0.139	-0.018	0.082	0.456	0.389	-0.034	-0.017	0.107	0.380
SCP	0.743**	0.677	-0.301	0.451*	3.371*	0.703*	0.571	-0.314	0.522*	2.790
4TH										
PSE Direct	0.432*	-0.836	0.110	0.232	1.843	0.443*	-0.614	0.105	0.140	1.447
RMS Auction	-0.093*	0.742**	0.009	0.008	1.927	-0.113*	0.762**	0.007	-0.002	1.767
RMS Direct	-0.579	-2.101	0.427*	-0.121	1.886	-0.682	-1.806	0.397*	-0.049	1.651
SCP	-0.474*	-0.286	-0.083	0.325	2.200	-0.621*	-0.230	-0.093	0.370	2.528
SMALLEST										
PSE Direct	0.195	-1.698*	0.177	-0.051	1.342	0.247	-0.888*	0.123	0.055	1.359
RMS Auction	-0.019	0.880**	-0.046	0.005	1.252	-0.031	0.894**	-0.035	0.006	0.551
RMS Direct	0.040	0.511	0.006	-0.047	0.384	0.046	0.759	0.114	-0.034	1.111
SCP	0.493	1.458	-0.432	0.242	0.843	1.191**	2.893**	-0.681*	0.252	4.571*

GROUPING:	UNWEIGHTED DATA					WEIGHTED DATA				
CATEGORY:	PSE Direct (-1)	RMS Auction (-1)	RMS Direct (-1)	SCP (-1)	Block Exogeneity (F-test)	PSE Direct (-1)	RMS Auction (-1)	RMS Direct (-1)	SCP (-1)	Block Exogeneity (F-test)

TRADING FREQ.										
TRADED										
	PSE Direct	0.084	-1.351**	0.077	0.053	3.313*	-0.078	-1.258**	0.030	-0.012	2.849
	RMS Auction	0.028	0.967**	-0.007	-0.021	0.219	0.109	0.977**	-0.001	-0.016	1.600
	RMS Direct	-0.358	-1.666*	0.312	-0.362	2.617	0.147	0.006	0.491**	0.008	0.071
	SCP	0.185	0.251	-0.074	0.362	0.118	-0.137	0.237	0.182	-0.048	0.051
2ND											
	PSE Direct	0.009	-2.815*	0.066	-0.011	2.120	-0.103	-0.910**	-0.001	-0.047	2.981
	RMS Auction	-0.124*	0.049	-0.042	-0.018	3.688*	-0.324**	0.306	-0.077*	-0.032	4.744*
	RMS Direct	-0.014	-0.042	-0.028	-0.020	0.019	-0.404	-1.006	0.162	0.173	1.054
	SCP	-0.283	-6.288*	0.648	0.239	2.684	0.030	-0.796	-0.308	0.189	0.655
3RD											
	PSE Direct										
	RMS Auction										
	RMS Direct										
	SCP										
4TH											
	PSE Direct										
	RMS Auction										
	RMS Direct										
	SCP										
NOT TRADED											
	PSE Direct										
	RMS Auction										
	RMS Direct										
	SCP										
MARKET SEGMENT											
A1											
	PSE Direct	-0.051	-0.585	-0.088	-0.091	0.115	-0.072	1.724	-0.073	-0.012	0.418
	RMS Auction	-0.010	0.863**	-0.013	-0.017*	2.739	-0.039	0.753**	-0.008	-0.006	1.822
	RMS Direct	0.043	3.757	0.271	-0.027	1.228	-0.010	6.402**	0.049	0.001	3.198*

	SCP	-0.016	4.119	-0.046	-0.098	0.339	-0.072	2.929	0.064	-0.064	0.037
GROUPING:		**UNWEIGHTED DATA**					**WEIGHTED DATA**				
CATEGORY:		PSE Direct (-1)	RMS Auction (-1)	RMS Direct (-1)	SCP (-1)	Block Exogeneity (F-test)	PSE Direct (-1)	RMS Auction (-1)	RMS Direct (-1)	SCP (-1)	Block Exogeneity (F-test)
A2											
	PSE Direct	0.395*	-0.495	0.015	-0.186	1.666	0.419*	-0.499	-0.004	-0.084	1.068
	RMS Auction	-0.055	0.864**	-0.014	-0.045	1.317	-0.044	0.908**	-0.001	-0.036	0.854
	RMS Direct	-0.060	-1.290	0.359*	-0.294	1.871	-0.196	-1.265*	0.436*	-0.268	2.258
	SCP	0.101	0.459	0.213	0.318	0.778	-0.032	0.474	0.343	0.203	1.091
B2											
	PSE Direct	-0.170	-2.459**	0.911**	0.217	6.071**	0.182	-0.682	-0.041	0.093	1.482
	RMS Auction	0.003	0.955**	-0.045	0.003	0.694	0.021	0.977**	-0.006	0.019	0.856
	RMS Direct	-0.137	-0.194	0.459*	-0.028	0.474	-0.047	0.155	0.213	0.033	0.177
	SCP	0.240	1.102	-0.487	0.219	0.693	0.298	0.548	0.084	0.095	0.146
C2											
	PSE Direct	0.549**	-1.267*	-0.071	0.014	1.478	0.325	-0.216	0.023	0.057	0.165
	RMS Auction	-0.099	0.302	-0.019	-0.026	1.916	0.031	-0.035	-0.082	0.030	0.385
	RMS Direct	0.002	-1.640	0.001	0.070	1.248	0.097	-0.704	0.115	0.083	0.444
	SCP	0.099	-0.528	-0.033	0.231	0.151	-0.030	-0.770	-0.154	0.693**	1.663
C3											
	PSE Direct										
	RMS Auction										
	RMS Direct										
	SCP										
FIRMS/FUNDS											
FIRMS											
	PSE Direct	0.395*	-1.030*	0.079	-0.004	2.561	0.420*	-0.547*	0.053	-0.008	2.143
	RMS Auction	-0.054	0.832**	-0.028	-0.024	2.499	-0.103	0.867**	-0.010	-0.015*	3.548*
	RMS Direct	-0.787*	-2.265**	0.325*	-0.190	3.490	0.108	-0.073	0.445*	0.002	0.031
	SCP	0.280	0.602	-0.084	0.300	0.195	0.450	0.875	0.184	-0.050	0.085
FUNDS											
	PSE Direct	-0.041	-0.704	0.015	0.165	0.533	-0.003	-0.362	0.040	-0.044	0.084
	RMS Auction	0.249**	0.170	-0.053	0.030	7.719**	0.256**	0.064	-0.091*	0.070	38.593**
	RMS Direct	0.177	-0.944	0.324	0.261	0.883	0.229	-0.521	0.247	-0.004	1.723
	SCP	-0.033	-0.809	-0.049	0.871**	1.164	0.088	-0.898**	0.010	0.811**	3.712*

Source of data: Czech Securities Exchange Commission

A.5 Tests of the equality of distributions of 'raw' percentage price spreads among marketplaces

GROUPING:	UNWEIGHTED DATA				WEIGHTED DATA			
CATEGORY:								
ALL AVERAGED								
	Kruskal-Wallis:	70.160**			Kruskal-Wallis:	64.480**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-5.004HH	5.004LL	PSE Auction		4.619LL	5.004LL
	PSE Direct	6.133LL		5.004LL	PSE Direct	-4.991HH		5.004LL
	SCP	-6.306HH	-6.306HH		SCP	-6.306HH	-6.306HH	
SIZE GROUPED								
BIGGEST								
	Kruskal-Wallis:	67.174**			Kruskal-Wallis:	66.078**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-5.004HH	5.004LL	PSE Auction		4.619LL	5.004LL
	PSE Direct	5.562LL		5.004LL	PSE Direct	-5.337HH		5.004LL
	SCP	-6.306HH	-6.306HH		SCP	-6.306HH	-6.306HH	
2ND								
	Kruskal-Wallis:	70.350**			Kruskal-Wallis:	71.122**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-5.389HH	5.004LL	PSE Auction		-5.389HH	5.004LL
	PSE Direct	6.168LL		5.004LL	PSE Direct	6.306LL		5.004LL
	SCP	-6.306HH	-6.306HH		SCP	-6.306HH	-6.306HH	
3RD								
	Kruskal-Wallis:	62.023**			Kruskal-Wallis:	62.545**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-5.004HH	5.004LL	PSE Auction		-5.389HH	5.004LL
	PSE Direct	5.289LL		4.477LL	PSE Direct	5.128LL		4.477LL
	SCP	-6.306HH	-5.852HH		SCP	-6.306HH	-5.973HH	
4TH								
	Kruskal-Wallis:	52.228**			Kruskal-Wallis:	58.209**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-4.188HH	4.903LL	PSE Auction		-5.295HH	4.903LL
	PSE Direct	3.598LL		3.671LL	PSE Direct	4.586LL		4.129LL
	SCP	-6.192HH	-5.455HH		SCP	-6.245HH	-5.723HH	
GROUPING:	**UNWEIGHTED DATA**				**WEIGHTED DATA**			
CATEGORY:								
SMALLEST								
	Kruskal-Wallis:	47.035**			Kruskal-Wallis:	54.418**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-4.801HH	3.491LL	PSE Auction		-4.801HH	4.364LL
	PSE Direct	5.229LL		3.881LL	PSE Direct	5.288LL		3.881LL
	SCP	-4.312HH	-5.564HH		SCP	-5.622HH	-5.564HH	
TRADING FREQ.								
TRADED								
	Kruskal-Wallis:	65.186**			Kruskal-Wallis:	67.695**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-5.004HH	5.004LL	PSE Auction		4.619LL	5.004LL
	PSE Direct	5.147LL		5.004LL	PSE Direct	-5.665HH		5.004LL
	SCP	-6.306HH	-6.306HH		SCP	-6.306HH	-6.306HH	
2ND								
	Kruskal-Wallis:	70.446**			Kruskal-Wallis:	71.025**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-5.389HH	5.004LL	PSE Auction		-5.389HH	5.004LL

	PSE Direct	6.185LL		5.004LL	PSE Direct	6.289LL		5.004LL
	SCP	-6.306HH	-6.306HH		SCP	-6.306HH	-6.306HH	
3RD								
	Kruskal-Wallis:	67.596**			Kruskal-Wallis:	67.888**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-5.389HH	5.004LL	PSE Auction		-5.389HH	5.004LL
	PSE Direct	5.963LL		4.695LL	PSE Direct	6.020LL		4.695LL
	SCP	-6.306HH	-6.114HH		SCP	-6.306HH	-6.114HH	
4TH								
	Kruskal-Wallis:	68.427**			Kruskal-Wallis:	68.148**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-5.389HH	5.004LL	PSE Auction		-5.389HH	5.004LL
	PSE Direct	6.035LL		4.800LL	PSE Direct	5.962LL		4.800LL
	SCP	-6.289HH	-6.182HH		SCP	-6.289HH	-6.182HH	
GROUPING:	**UNWEIGHTED DATA**				**WEIGHTED DATA**			
CATEGORY:								
NOT TRADED								
	Kruskal-Wallis:	58.466**			Kruskal-Wallis:	62.566**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-4.511HH	4.511LL	PSE Auction		-4.903HH	4.903LL
	PSE Direct	5.315LL		4.364LL	PSE Direct	5.270LL		4.364LL
	SCP	-5.658HH	-5.901HH		SCP	-6.306HH	-5.901HH	
MARKET SEGMENT								
A1								
	Kruskal-Wallis:	71.122**			Kruskal-Wallis:	71.122**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		5.004LL	5.004LL	PSE Auction		5.004LL	5.004LL
	PSE Direct	-6.306HH		5.004LL	PSE Direct	-6.306HH		5.004LL
	SCP	-6.306HH	-6.306HH		SCP	-6.306HH	-6.306HH	
A2								
	Kruskal-Wallis:	54.084**			Kruskal-Wallis:	53.466**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		1.155	5.004LL	PSE Auction		-1.155	5.004LL
	PSE Direct	-1.289		5.004LL	PSE Direct	0.528		5.004LL
	SCP	-6.306HH	-6.306HH		SCP	-6.306HH	-6.306HH	
B2								
	Kruskal-Wallis:	61.147**			Kruskal-Wallis:	69.876**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-3.079HH	5.004LL	PSE Auction		-5.004HH	5.004LL
	PSE Direct	4.178LL		5.004LL	PSE Direct	6.081LL		5.004LL
	SCP	-6.306HH	-6.306HH		SCP	-6.306HH	-6.306HH	
C2								
	Kruskal-Wallis:	71.025**			Kruskal-Wallis:	69.782**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-5.389HH	5.004LL	PSE Auction		-5.389HH	5.004LL
	PSE Direct	6.289LL		5.004LL	PSE Direct	6.064LL		5.004LL
	SCP	-6.306HH	-6.306HH		SCP	-6.306HH	-6.306HH	
GROUPING:	**UNWEIGHTED DATA**				**WEIGHTED DATA**			
CATEGORY:								
C3								
	Kruskal-Wallis:	69.311**			Kruskal-Wallis:	69.115**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-5.389HH	5.004LL	PSE Auction		-5.389HH	5.004LL

	PSE Direct	6.181LL		4.800LL	PSE Direct	6.145LL		4.800LL
	SCP	-6.306HH	-6.181HH		SCP	-6.306HH	-6.181HH	
FIRMS/FUNDS								
FIRMS								
	Kruskal-Wallis:	70.541**			Kruskal-Wallis:	64.326**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-5.004HH	5.004LL	PSE Auction		3.849LL	5.004LL
	PSE Direct	6.202LL		5.004LL	PSE Direct	-4.956HH		5.004LL
	SCP	-6.306HH	-6.181HH		SCP	-6.306HH	-6.306HH	
FUNDS								
	Kruskal-Wallis:	56.373**			Kruskal-Wallis:	54.209**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-2.309H	5.004LL	PSE Auction		0.770	5.004LL
	PSE Direct	2.604LL		5.004LL	PSE Direct	-1.393		5.004LL
	SCP	-6.306HH	-6.181HH		SCP	-6.306HH	-6.306HH	

Source of data: Czech Securities Exchange Commission

A.6 Tests of declining 'raw' price spreads over time for groups of firms

GROUPING:		UNWEIGHTED DATA		WEIGHTED DATA	
CATEGORY:		Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)
ALL AVERAGED					
	PSE Auction	2.038L	3.413LL	-0.971	-1.125
	PSE Direct	-1.698	-2.261HH	-0.728	-0.903
	SCP	4.028LL	12.548LL	4.270LL	13.320LL
SIZE GROUPED					
BIGGEST					
	PSE Auction	1.407	1.378	-1.844	-2.102H
	PSE Direct	-0.097	-0.003	-0.534	-0.790
	SCP	3.882LL	11.063LL	4.270LL	13.255LL
2ND					
	PSE Auction	2.426L	3.336LL	3.154LL	7.104LL
	PSE Direct	1.797	1.932	3.787LL	5.527LL
	SCP	3.639LL	8.042LL	3.639LL	7.853LL
3RD					
	PSE Auction	2.912LL	3.616LL	4.173LL	9.983LL
	PSE Direct	2.471L	-0.074	3.501LL	5.114LL
	SCP	4.125LL	12.165LL	3.931LL	11.852LL
4TH					
	PSE Auction	0.463	2.041L	4.063LL	10.059LL
	PSE Direct	-0.371	-1.625	1.484	1.488
	SCP	4.076LL	12.906LL	4.028LL	12.837LL
SMALLEST					
	PSE Auction	-2.760HH	-3.656HH	2.760LL	4.915LL
	PSE Direct	1.481	1.744	1.481	2.022LL
	SCP	4.222LL	14.946LL	4.125LL	14.530LL
TRADING FREQ.					
TRADED					
	PSE Auction	0.873	0.444	-2.038H	-2.385H
	PSE Direct	-0.873	-0.561	-0.534	-0.757
	SCP	4.173LL	10.583LL	4.319LL	12.865LL
2ND					
	PSE Auction	2.669LL	3.725LL	1.650	2.155L
	PSE Direct	1.844	2.142L	1.553	1.343
	SCP	3.494LL	7.983LL	3.057LL	7.183LL
3RD					
	PSE Auction	3.251LL	6.545LL	4.076LL	8.212LL
	PSE Direct	1.581	1.434	3.748LL	3.997LL
	SCP	3.979LL	10.686LL	3.979LL	9.343LL
4TH					
	PSE Auction	0.437	1.099	3.494LL	9.153LL
	PSE Direct	1.424	1.889	3.342LL	5.014LL
	SCP	4.173LL	13.652LL	3.931LL	11.317LL
NOT TRADED					
	PSE Auction	1.955L	0.991	4.063LL	8.907LL
	PSE Direct	1.368	0.333	1.596	0.058
	SCP	3.834LL	11.210LL	3.591LL	7.630LL

MARKET SEGMENT					
A1					
	PSE Auction	-2.620HH	-3.953HH	-2.669HH	-3.747HH
	PSE Direct	-2.620HH	-3.826HH	-1.407	-1.545
	SCP	4.270LL	7.997LL	4.319LL	5.864LL
GROUPING:		**UNWEIGHTED DATA**		**WEIGHTED DATA**	
CATEGORY:		Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)
A2					
	PSE Auction	-0.534	-0.477	-0.388	-0.722
	PSE Direct	-0.825	-0.973	0.728	0.742
	SCP	4.319LL	12.631LL	4.270LL	12.007LL
B2					
	PSE Auction	-0.873	-0.523	-0.728	-0.560
	PSE Direct	1.310	2.194L	2.087L	3.932LL
	SCP	4.173LL	10.290LL	4.125LL	10.519LL
C2					
	PSE Auction	2.426L	3.850LL	1.553	1.586
	PSE Direct	1.650	1.752	3.737LL	3.154LL
	SCP	3.688LL	9.276LL	3.639LL	11.891LL
C3					
	PSE Auction	0.922	1.783	3.542LL	8.036LL
	PSE Direct	1.424	1.870	3.066LL	2.971LL
	SCP	4.076LL	13.336LL	3.445LL	9.076LL
FIRMS/FUNDS					
FIRMS					
	PSE Auction	2.038L	2.987LL	-1.698	-1.606
	PSE Direct	-0.631	-0.992	-0.388	-0.447
	SCP	3.931LL	12.028LL	4.270LL	13.297LL
FUNDS					
	PSE Auction	2.281L	2.215L	0.922	0.695
	PSE Direct	-2.087H	-3.500HH	-2.281H	-3.206HH
	SCP	3.979LL	13.364LL	3.300LL	5.855LL

Source of data: Czech Securities Exchange Commission

A.7 VAR models of 'raw' price spreads

GROUPING:		UNWEIGHTED DATA				WEIGHTED DATA			
CATEGORY:	DEP. VARIABLE	PSE Auction (-1)	PSE Direct (-1)	SCP (-1)	Block Exogeneity (F-test)	PSE Auction (-1)	PSE Direct (-1)	SCP (-1)	Block Exogeneity (F-test)
ALL AVERAGED									
	PSE Auction	0.569**	0.195	0.096**	3.871*	0.659**	-0.055	0.062*	3.722*
	PSE Direct	0.596*	0.378*	-0.066	5.330*	1.171**	0.178	0.005	11.715**
	SCP	0.376	-0.170	0.898**	0.194	0.272	0.061	0.936**	0.339
SIZE GROUPED									
BIGGEST									
	PSE Auction	0.529**	0.081	0.092**	6.026**	0.699**	-0.054	0.055*	3.189
	PSE Direct	0.620**	0.100	0.009	11.922**	1.126**	0.170	0.024	12.163**
	SCP	0.387	-0.241	0.940**	0.246	0.212	0.067	0.944**	0.287
2									
	PSE Auction	0.660**	0.187	0.085*	4.299*	0.863**	0.968	0.015	0.475
	PSE Direct	-0.542*	0.387*	0.222**	7.681**	0.009	0.609**	0.002	1.236
	SCP	1.205*	0.642	0.552**	4.410*	0.351	-0.899	0.902**	0.542
3									
	PSE Auction	0.585**	-0.186	0.144*	2.375	0.486	2.748	0.124	1.885
	PSE Direct	-0.227	-0.126	0.150	4.883*	0.005	0.419	0.001	1.422
	SCP	0.437	0.182	0.822**	0.168	0.988	-1.147	0.694**	1.511
4									
	PSE Auction								
	PSE Direct								
	SCP								
SMALLEST									
	PSE Auction								
	PSE Direct								
	SCP								
TRADING FREQ.									
TRADED									
	PSE Auction	0.566**	0.083	0.080**	5.497*	0.674**	-0.049	0.057*	3.173
	PSE Direct	0.608*	0.154	0.007	9.552**	1.139**	0.179	0.030	12.446**
	SCP	0.534	-0.378	0.934**	0.505	0.207	0.044	0.951**	0.219

GROUPING:		UNWEIGHTED DATA				WEIGHTED DATA			
CATEGORY:	DEP. VARIABLE	PSE Auction (-1)	PSE Direct (-1)	SCP (-1)	Block Exogeneity (F-test)	PSE Auction (-1)	PSE Direct (-1)	SCP (-1)	Block Exogeneity (F-test)
2									
	PSE Auction	0.403*	0.146	0.152**	6.825**	0.688**	0.116	0.069	1.661

	PSE Direct	-0.924*	0.019	0.358**	20.695**	0.027	0.164	0.022	3.949*
	SCP	1.094	0.750*	0.597**	6.435**	0.536	-0.601	0.866**	0.889
3									
	PSE Auction	0.737**	0.134	0.067	0.784	0.675**	0.347	0.079	1.465
	PSE Direct	-0.007	0.446*	0.051	3.240	0.065	0.312	-0.006	2.487
	SCP	0.403	0.309	0.833**	0.556	0.383	0.508	0.860**	0.302
4									
	PSE Auction	0.817**	0.047	0.058	0.890	0.715**	0.447	0.067	1.131
	PSE Direct	0.287	0.232	-0.010	4.523*	-0.017	0.641**	0.009	0.947
	SCP	0.192	-0.021	0.901**	0.153	0.545	-0.441	0.814**	0.715
NOT TRADED									
	PSE Auction								
	PSE Direct								
	SCP								
MARKET SEGMENT									
A1									
	PSE Auction	0.320	0.051	0.059*	4.857*	0.331	0.023	0.062*	5.121*
	PSE Direct	0.873	0.303	0.137*	4.927*	1.250*	0.199	0.156*	8.985**
	SCP	0.119	-0.024	0.989**	0.092	-0.056	0.070	0.975**	0.146
A2									
	PSE Auction	0.671**	0.008	0.050*	2.054	0.795**	-0.131	0.050*	1.977
	PSE Direct	0.770*	0.029	0.044	8.478**	0.516*	-0.204	0.102**	15.582**
	SCP	1.054	-0.879	0.960**	1.927	0.749	-0.801	0.983**	1.310
B2									
	PSE Auction	0.702**	0.090	0.052	2.641	0.657**	-0.019	0.071*	3.334
	PSE Direct	0.191	0.307	0.076	6.303**	0.026	0.496*	0.052	3.201
	SCP	0.282	0.284	0.867**	0.553	0.223	0.391	0.889**	0.521
C2									
	PSE Auction	0.540**	0.160	0.104*	4.340*	0.684**	0.128	0.048*	3.292
	PSE Direct	0.235	0.233	0.032	6.613**	0.184	0.343	0.017	4.311*
	SCP	0.900	0.063	0.731**	1.073	0.102	0.218	0.951**	0.271
GROUPING:		**UNWEIGHTED DATA**				**WEIGHTED DATA**			
CATEGORY:	DEP. VARIABLE	PSE Auction (-1)	PSE Direct (-1)	SCP (-1)	Block Exogeneity (F-test)	PSE Auction (-1)	PSE Direct (-1)	SCP (-1)	Block Exogeneity (F-test)
C3									
	PSE Auction	0.880**	-0.261	0.069	1.968	0.747**	0.054	0.063	0.906
	PSE Direct	0.106	-0.164	0.080	8.888**	-0.027	0.370	0.014	1.986
	SCP	0.124	0.289	0.897**	0.213	0.486	-1.243	0.852**	0.918
FIRMS/FUNDS									
FIRMS									

	PSE Auction	0.657**	0.222	0.068*	3.060	0.643**	-0.017	0.057*	2.918
	PSE Direct	0.577**	0.227	-0.041	7.703**	1.112**	0.204	0.014	11.860**
	SCP	0.499	-0.387	0.891**	0.409	0.381	0.082	0.913**	0.590
FUNDS									
	PSE Auction	0.493**	-0.004	0.126**	4.668*	0.546**	-0.060	0.071*	3.642*
	PSE Direct	0.149	0.583**	0.046	3.275	0.296	0.347	0.063	5.543*
	SCP	0.070	0.009	0.971**	0.140	-0.449	0.061	1.046**	1.384

Source of data: Czech Securities Exchange Commission

A.8 Tests of the equality of distributions of percentage price spreads among marketplaces

GROUPING:	**UNWEIGHTED DATA**				**WEIGHTED DATA**			
CATEGORY:								
ALL AVERAGED								
	Kruskal-Wallis:	66.411**			Kruskal-Wallis:	70.927**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		4.619LL	5.004LL	PSE Auction		5.004LL	5.004LL
	PSE Direct	-5.406HH		5.004LL	PSE Direct	6.306HH		5.004LL
	SCP	-6.306HH	-6.306HH		SCP	-6.306HH	-6.271HH	
SIZE GROUPED								
BIGGEST								
	Kruskal-Wallis:	70.446**			Kruskal-Wallis:	69.971**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		5.004LL	5.004LL	PSE Auction		5.004LL	5.004LL
	PSE Direct	-6.185HH		5.004LL	PSE Direct	-6.306HH		5.004LL
	SCP	-6.306HH	-6.306HH		SCP	-6.306HH	-6.098HH	
2ND								
	Kruskal-Wallis:	53.799**			Kruskal-Wallis:	54.145**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		1.155	5.004LL	PSE Auction		-2.694HH	5.004LL
	PSE Direct	-1.012		5.004LL	PSE Direct	1.341		5.004LL
	SCP	-6.306HH	-6.306HH		SCP	-6.306HH	-6.306HH	
3RD								
	Kruskal-Wallis:	57.171**			Kruskal-Wallis:	53.572**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		2.694LL	5.004LL	PSE Auction		0.385	5.004LL
	PSE Direct	-3.019HH		5.004LL	PSE Direct	-0.718		5.004LL
	SCP	-6.306HH	-6.271HH		SCP	-6.306HH	-6.306HH	
4TH								
	Kruskal-Wallis:	53.141**			Kruskal-Wallis:	54.834**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-0.385	5.004LL	PSE Auction		-2.309H	5.004LL
	PSE Direct	-0.908		5.004LL	PSE Direct	1.998L		5.004LL
	SCP	-6.289HH	-6.254HH		SCP	-6.289HH	-6.289HH	
SMALLEST								
	Kruskal-Wallis:	55.096**			Kruskal-Wallis:	60.638**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-2.309H	5.004LL	PSE Auction		-3.850HH	5.004LL
	PSE Direct	1.981L		5.004LL	PSE Direct	4.040LL		5.004LL
	SCP	-6.306HH	-6.306HH		SCP	-6.306HH	-6.306HH	

GROUPING: CATEGORY:	UNWEIGHTED DATA				WEIGHTED DATA			
TRADING FREQ.								
TRADED								
	Kruskal-Wallis:	66.747**			Kruskal-Wallis:	70.927**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		4.619LL	5.004LL	PSE Auction		5.004LL	5.004LL
	PSE Direct	-5.475HH		5.004LL	PSE Direct	-6.306HH		5.004LL
	SCP	-6.306HH	-6.306HH		SCP	-6.306HH	-6.271HH	
2ND								
	Kruskal-Wallis:	53.903**			Kruskal-Wallis:	55.781**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-2.309H	5.004LL	PSE Auction		-3.464HH	5.004LL
	PSE Direct	1.635		5.004LL	PSE Direct	2.396L		5.004LL
	SCP	-6.306HH	-6.237HH		SCP	-6.289HH	-6.306HH	
3RD								
	Kruskal-Wallis:	45.503**			Kruskal-Wallis:	49.279**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-2.309H	5.004LL	PSE Auction		-3.079HH	5.004LL
	PSE Direct	1.020		3.536LL	PSE Direct	2.132L		4.007LL
	SCP	-6.202HH	-5.099HH		SCP	-6.237HH	-5.400HH	
4TH								
	Kruskal-Wallis:	52.674**			Kruskal-Wallis:	61.587**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-3.849HH	5.004LL	PSE Auction		-5.004HH	5.004LL
	PSE Direct	2.689LL		4.129LL	PSE Direct	5.300LL		4.129LL
	SCP	-6.306HH	-5.657HH		SCP	-6.306HH	-5.724HH	
NOT TRADED								
	Kruskal-Wallis:	4.066			Kruskal-Wallis:	4.066		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-3.753HH	-2.021H	PSE Auction		-3.753HH	-2.021H
	PSE Direct	2.398L		0.000	PSE Direct	2.398L		0.000
	SCP	0.548	-1.836		SCP	0.548	-1.836	
MARKET SEGMENT								
A1								
	Kruskal-Wallis:	71.122**			Kruskal-Wallis:	68.585**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		5.004LL	5.004LL	PSE Auction		5.004LL	5.004LL
	PSE Direct	-6.306HH		5.004LL	PSE Direct	-6.306HH		5.004LL

	SCP	-6.306HH	-6.306HH		SCP	-6.306HH	-5.839HH	
GROUPING:	**UNWEIGHTED DATA**				**WEIGHTED DATA**			
CATEGORY:								
A2								
	Kruskal-Wallis:	54.537**			Kruskal-Wallis:	53.370**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		1.155	5.004LL	PSE Auction		0.000	5.004LL
	PSE Direct	-1.635		5.004LL	PSE Direct	-0.251		5.004LL
	SCP	-6.306HH	-6.306HH		SCP	-6.306HH	-6.306HH	
B2								
	Kruskal-Wallis:	54.614**			Kruskal-Wallis:	53.415**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		0.770	5.004LL	PSE Auction		-1.540	5.004LL
	PSE Direct	-1.687		5.004LL	PSE Direct	0.407		5.004LL
	SCP	-6.306HH	-6.306HH		SCP	-6.306HH	-6.306HH	
C2								
	Kruskal-Wallis:	53.244**			Kruskal-Wallis:	53.359**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-0.770	5.004LL	PSE Auction		-1.540	5.004LL
	PSE Direct	-0.320		5.004LL	PSE Direct	-0.199		5.004LL
	SCP	-6.306HH	-6.289HH		SCP	-6.306HH	-6.289HH	
C3								
	Kruskal-Wallis:	14.817**			Kruskal-Wallis:	31.205**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		-5.004HH	3.464LL	PSE Auction		-5.004HH	4.619LL
	PSE Direct	-1.141		0.000	PSE Direct	-1.901		0.000
	SCP	-3.815HH	-0.795		SCP	-5.372HH	-2.247H	
FIRMS/FUNDS								
FIRMS								
	Kruskal-Wallis:	61.407**			Kruskal-Wallis:	69.476**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		3.464LL	5.004LL	PSE Auction		5.004LL	5.004LL
	PSE Direct	-4.247HH		5.004LL	PSE Direct	-6.202HH		5.004LL
	SCP	-6.306HH	-6.289HH		SCP	-6.306HH	-6.116HH	
FUNDS								
	Kruskal-Wallis:	59.328**			Kruskal-Wallis:	60.701**		
		PSE Auction	PSE Direct	SCP		PSE Auction	PSE Direct	SCP
	PSE Auction		3.464LL	5.004LL	PSE Auction		3.849LL	5.004LL
	PSE Direct	-3.659HH		5.004LL	PSE Direct	-4.057HH		5.004LL
	SCP	-6.306HH	-6.289HH		SCP	-6.306HH	-6.306HH	

Source of data: Czech Securities Exchange Commission

A.9 Tests of declining price spreads over time for individual firms

ISIN	NAME	PSE auction		PSE direct		SCP	
		Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)
CS0008441952	CEZ A.S.	-2.184H	-2540H	-1.698	1.278	2.329L	0.711
CZ0008019106	KOMERCNÍ BANKA, A.S.	-2.393H	-3.203HH	-1.849	-1.088	2.393L	2.042L
CZ0008023801	CESKÁ SPORITELNA A.S.	-0.194	-0.506	2.087L	2.447L	3.154LL	3.404LL
CZ0008002854	INVESTICNÍ A POŠTOVNÍ BANKA A.S	-3.000HH	-3.934HH	-3.256HH	-3.206HH	2.641LL	1.448
CS0008418869	TABÁK A.S.	-1.183	-0.840	0.977	0.700	2.983LL	5.164LL
CS0008420964	COKOLÁDOVNY PRAHA, A.S.	1.553	1.179	1.553	1.184	3.348LL	4.013LL
CZ0008026705	SPORITELNÍ PRIVATIZACNÍ-CESKÝ IF, A.S.	-1.414	-0.886	-2.448H	-4.762HH	3.481LL	1.575
CZ0008012804	IPF KOMERCNÍ BANKY, A.S.	-2.883HH	-3.150HH	-1.795	-1.023	2.393L	1.661
CS0005041250	ŠKODA A.S.	-1.000	-1.619	-0.538	-1.105	3.718LL	3.422LL
CZ0005078352	SEVEROMORAVSKÁ ENERGETIKA A.S.	-0.846	-0.767	1.899	-0.035	1.974L	2.688LL
CS0005012954	ASSIDOMAN SEPAP A.S.	2.038L	0.793	2.359L	1.449	3.494LL	1.594
CS0005017953	BIOCEL PASKOV A.S.	2.282L	1.924	0.873	2.883LL	2.128L	3.730LL
CZ0005078154	PRAZSKÁ ENERGETIKA A.S.	-0.049	-0.113	1.961L	1.539	2.329L	3.189LL
CS0008001509	RESTITUCNÍ INV.FOND CESKÉ REPUBLIKY AS	0.272	0.590	-2.339H	-2.016H	2.611LL	2.925LL
CZ0009054656	CESKÉ RADIOKOMUNIKACE A.S.	-0.194	0.941	1.815	4.219LL	2.717LL	4.125LL
CZ0009086708	HARVARDSKÝ PRUMYSLOVÝ HOLDING v likvid	-0.169	-0.011	1.574	0.854	0.605	1.930
CZ0005077958	JIHOMORAVSKÁ ENERGETIKA A.S	1.310	1.391	2.095L	1.922	2.912LL	2.863LL
CZ0005091959	SYNTHESIA, A.S.	-0.692	-0.257	1.182	-0.353	-0.128	-0.173
CS0008447850	ELEKTRÁRNY OPATOVICE A.S.	-2.329H	-2.075H	-2.087H	-2.200H	3.300LL	4.954LL
CS0009027966	ELEKTRÁRNY OPATOVICE A.S.						
CZ0008003704	PRIVATIZACNÍ INVESTICNÍ FOND,A.S.	1.310	0.711	-0.679	-1.908	2.426L	2.082L
CZ0005104752	LÉCIVA PRAHA A.S.	-2.883HH	-2.918HH	-2.284H	-1.705	2.556L	3.311LL
CZ0008002755	CESKÁ POJIŠtOVNA A.S.	-0.385	-0.280	0.595	0.383	2.744LL	3.768LL
CZ0005098251	NOVÁ HUT A.S.	1.456	1.475	1.747	2.564L	2.087L	0.868
CS0008439659	PRAZSKÁ TEPLÁRENSKÁ A.S.	0.485	-1.002	2.073L	2.030L	3.348LL	2.389L
CZ0008002557	ZIVNOSTENSKÁ BANKA A.S.	-2.179H	-2.436H	-0.287	-1.082	2.692LL	1.353
CS0008464350	PIVOVAR RADEGAST A.S.	-1.941	-2.177H	1.945	0.174	3.300LL	4.441LL
CZ0005110155	INZENÝRSKÉ A PRUMYSLOVÉ STAVBY A.S.	-1.585	-0.413	0.340	1.434	0.739	0.272
CZ0005102350	SEVEROCESKÉ DOLY A.S.	2.179L	1.393	1.154	-0.017	3.615LL	2.077L
CZ0008026606	SPORITELNÍ PRIVATIZACNÍ-VÝNOSOVÝ IF	0.795	1.309	0.487	0.973	3.615LL	2.202L
CS0008416251	PODNIK VÝPOCETNÍ TECHNIKY A.S.	1.553	1.223	1.956	2.702LL	1.893	3.266LL
CZ0005078253	STREDOCESKÁ ENERGETICKÁ A.S.	1.795	1.614	0.096	1.542	3.542LL	4.191LL

ISIN	NAME	PSE auction		PSE direct		SCP	
		Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)
CS0005020957	VODNÍ STAVBY PRAHA A.S.	-0.873	-0.673	-1.916	-1.528	3.154LL	3.613LL
CZ0005076950	VÝCHODOCESKÁ ENERGETIKA A.S.	-0.333	-0.635	1.949	1.093	3.000LL	3.474LL
CZ0005078055	SEVEROCESKÁ ENERGETIKA A.S.	1.821	1.481	-0.132	-0.546	3.051LL	4.105LL
CZ0005084459	SEVEROMORAVSKÁ PLYNÁRENSKÁ A.S.	-1.407	-1.359	-0.244	-0.791	2.863LL	4.313LL
CZ0005077354	ZÁPADOCESKÁ ENERGETIKA A.S.	1.456	0.367	1.328	0.960	2.426L	3.291LL
CZ0008026507	SPORITELNÍ PRIVATIZACNÍ-VŠEOBECNÝ IFAS	0.590	0.741	1.179	0.332	1.821	1.480
CS0008414751	VERTEX A.S.	0.490	0.809	-0.652	0.532	3.536LL	4.839LL
CS0008414058	DEZA A.S.	-1.310	-2.567H	1.068	1.861	2.523L	3.641LL
CS0008433652	MORAVSKOSLEZSKÉ TEPLÁRNY A.S.	-1.601	-1.548	3.094LL	0.188	3.251LL	5.557LL
CZ0009084505	PPF INVESTICNÍ HOLDING A.S.	1.140	1.331	-0.891	0.536	1.491	1.195
CS0005004357	ZÁVODY PRESNÉHO STROJÍRENSTVÍ ZLÍN A.S	-1.407	-1.882	-0.117	0.830	2.232L	1.599
CS0005010552	TRINECKÉ ZELEZÁRNY A.S.	-0.097	0.508	1.514	1.769	0.582	0.504
CS0008424958	SPOLANA A.S.	-0.146	0.266	0.208	1.324	0.922	0.870
CS0008412854	BVV A.S.	2.038L	3.108LL	-0.097	0.275	0.534	1.207
CS0008465050	KERAMIKA HORNÍ BRÍZA A.S.	-0.692	-0.628	2.213L	2.474L	3.410LL	5.193LL
CZ0008011509	RENTIERSKÝ INVESTICNÍ FOND 1.IN A.S.	-0.776	-0.366	-2.421H	-1.602	2.281L	1.275
CZ0005104950	CEZ A.S.	-1.523	-1.961H	-0.272	1.049	3.155LL	4.644LL
CZ0005077057	JIHOCESKÁ ENERGETIKA A.S.	2.523L	3.394LL	1.468	0.819	3.300LL	3.947LL
CZ0008007903	ZIVNOBANKA-1. IF, A.S.	-1.686	-1.379	-0.435	-0.069	2.393L	1.770
CS0008443958	CHLUMCANSKÉ KERAMICKÉ ZÁVODY A.S.	0.728	0.321	-1.188	-0.098	3.251LL	3.963LL
CZ0005100057	MOSTECKÁ UHELNÁ SPOLECNOST A.S	0.277	-1.126	-0.647	-1.973	3.203LL	3.179LL
CZ0005100164	MOSTECKÁ UHELNÁ SPOLECNOST A.S						
CZ0005111054	PRAZSKÉ PIVOVARY A.S.		1.743		1.705		1.488
CS0005006667	CEMENTÁRNY A VÁPENKY MOKRÁ A.S.	-0.582	-0.979	2.677LL	0.344	3.106LL	4.116LL
CZ0008011301	IF BOHATSTVÍ, A.S.	-0.873	-0.962	-1.172	-0.712	0.873	-0.079
CZ0008460052	SETUZA A.S.	-1.407	-1.551	-0.399	-0.349	2.863LL	3.210LL
CZ0005096859	GALENA A.S.	-0.485	-0.335	-2.620HH	-3.258HH	2.863LL	3.174LL
CZ0005103952	SOKOLOVSKÁ UHELNÁ A.S.	1.142	1.450	0.808	0.744	3.264LL	3.340LL
CS0005022854	STAVBY SILNIC A ZELEZNIC A.S.	-1.116	-1.002	-0.077	-1.088	1.504	2.374L
CZ0005100651	OKD A.S.	2.620LL	2.574LL	2.754LL	2.175L	3.737LL	1.832
CS0008418752	RAKOVNICKÉ KERAMICKÉ ZÁVODY, A.S.	-1.893	-3.492HH	1.101	0.830	2.087L	3.849LL
CZ0005078956	JIHOMORAVSKÁ PLYNÁRENSKÁ A.S.	0.243	0.941	-0.744	-1.001	2.281L	4.479LL
CZ0005006502	METROSTAV A.S.		3.617LL		0.000		0.216
CS0008443057	TMP-TELEKOM.MONTÁZE PRAHA A.S.	-1.019	-0.083	0.602	1.787	2.912LL	5.033LL

ISIN	NAME	PSE auction		PSE direct		SCP	
		Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)
CZ0005092551	VÝCHODOCESKÁ PLYNÁRENSKÁ A.S.	-1.650	-1.039	0.797	1.458	1.650	1.793
CZ0005005850	JIHOCESKÉ PAPÍRNY A.S. VETRNÍ	-2.437H	-2.673HH	-0.718	-0.430	0.434	1.360
CZ0005092452	SEVEROCESKÁ PLYNÁRENSKÁ A.S.	0.728	0.242	1.045	2.394L	2.184L	2.856LL
CZ0008025707	2.SPORITELNÍ PRIVATIZACNÍ IF A.S.	1.359	1.831	-0.827	-0.841	2.766LL	0.613
CS0008449658	MORAVSKÉ NAFTOVÉ DOLY A.S.	-0.825	-0.029	1.044	4.018LL	1.601	2.158L
CZ0005084350	PRAZSKÁ PLYNÁRENSKÁ A.S.	1.407	0.940	1.906	0.177	2.087L	2.258L
CS0008458659	PRVNÍ SEVEROZÁPADNÍ TEPLÉRENSKÁ A.S.	0.582	-0.142	0.951	-0.500	3.057LL	3.413LL
CS0005029156	CESKÁ ZBROJOVKA A.S.	0.485	-0.123	0.644	2.036L	2.572L	2.696LL
CZ0005078758	ZÁPADOCESKÁ PLYNÁRENSKÁ A.S.	1.650	1.206			3.348LL	2.661LL
CZ0008418001	FINOP HOLDING A.S.		0.243		3.605LL		-0.206
CZ0008444254	PLZENSKÝ PRAZDROJ, A.S.	1.990L	1.011	0.249	0.974	3.009LL	3.866LL
CS0005002765	CKD PRAHA HOLDING A.S.	1.019	1.174	1.974L	1.929	3.785LL	3.074LL
CS0008458550	SEVEROCESKÉ TEPLÁRNY A.S.	0.971	1.880	1.163	0.691	2.281L	1.005
CS0005026152	JUTA A.S.	-1.213	-0.855	1.050	-0.001	1.213	1.386
CZ0008418951	CÍZKOVICKÁ CEMENTÁRNA A.S.	-1.747	-0.475	-1.549	-0.899	1.019	1.269
CZ0005078659	STREDOCESKÁ PLYNÁRENSKÁ, A.S.	0.243	1.227	1.225	0.089	2.184L	3.914LL
CZ0005098558	VÍTKOVICE A.S.	-0.897	0.192	1.376	0.893	2.590LL	1.605
CZ0008011004	KRIŠTÁLOVÝ IF A.S.	0.333	0.304	-2.508H	-1.614	1.769	2.122L
CZ0009062154	SEVEROCESKÉ VODOVODY A KANALIZACE A.S.	0.971	1.453	-1.225	-0.079	1.553	-0.157
CZ0008436151	HOTEL INTER.CONTINENTAL PRAHA A.S.	2.184L	1.603	-0.575	-1.183	3.445LL	2.557L
CS0005020759	DAEWOO AVIA A.S.	-0.485	-0.479	-0.314	-0.328	3.494LL	1.109
CZ0005078857	JIHOCESKÁ PLYNÁRENSKÁ A.S.	1.601	1.796	0.804	1.388	2.087L	3.576LL
CZ0005104356	GRAMOFONOVÉ ZÁVODY A.S.	-0.534	0.266	-1.026	-0.948	2.135L	0.683
CS0009029764	ORTAS A.S.						
CZ0009049953	PRAMEN IK A.S.	0.679	0.479			0.230	0.272
CZ0009078804	LE CYGNE SPORTIF GROUP A.S.					0.645	0.653
CZ0008025509	ZLATÝ INVESTICNÍ FOND KVANTO, A.S.	0.868	2.209L	-0.394	0.424	2.863LL	2.587LL
CZ0005108209	CEMENT BOHEMIA PRAHA, A.S.	1.883	1.982L		-0.095	2.620LL	1.674
CZ0008025004	UNION BANKA, A.S.	1.000				2.116L	1.522
CZ0008030509	CESKOMORAVSKÁ HYPOTECNÍ BANKA A.S.						
CZ0009091500	UNIPETROL a.s.		-1.231		1.442		-0.734
CZ0009092201	BANKOVNÍ HOLDING A.S.						
CZ0005106104	KORAMO, A.S.						
CZ0009080602	CHEMAPOL GROUP A.S.	-1.528	-1.365		-1.636	1.609	1.987L

Source of data: Czech Securities Exchange Commission

A.10 Tests of declining price spreads over time for groups of firms

GROUPING:		UNWEIGHTED DATA		WEIGHTED DATA	
CATEGORY:		Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)
ALL AVERAGED					
	PSE Auction	-0.340	-0.490	-2.620HH	-3.566HH
	PSE Direct	1.116	0.622	-0.291	0.973
	SCP	3.639LL	3.110LL	3.300LL	4.512LL
SIZE GROUPED					
BIGGEST					
	PSE Auction	-2.038H	-2.090H	-2.815HH	-3.883HH
	PSE Direct	-0.243	-0.305	-1.456	0.736
	SCP	1.941	3.048LL	2.281L	2.988LL
2					
	PSE Auction	-0.291	-0.265	-0.388	-0.387
	PSE Direct	-0.340	-0.519	0.873	0.764
	SCP	3.785LL	4.822LL	3.785LL	4.634LL
3					
	PSE Auction	-0.146	-0.096	-0.049	0.158
	PSE Direct	1.068	1.424	1.213	1.712
	SCP	4.173LL	3.001LL	4.028LL	2.810LL
4					
	PSE Auction	-2.281H	-0.717	-2.378H	-0.681
	PSE Direct	0.776	0.803	0.922	1.102
	SCP	3.591LL	2.968LL	3.639LL	2.938LL
SMALLEST					
	PSE Auction	1.990L	1.934	1.407	1.489
	PSE Direct	1.795	2.023L	2.475L	2.974LL
	SCP	3.251LL	0.438	3.203LL	0.563
TRADING FREQ.					
TRADED					
	PSE Auction	-1.262	-0.910	-2.766HH	-3.687HH
	PSE Direct	1.601	1.331	-0.437	0.966
	SCP	3.931LL	5.612LL	3.203LL	4.575LL
2					
	PSE Auction	0.388	0.117	1.747	0.928
	PSE Direct	1.407	-0.934	2.378L	1.833
	SCP	3.639LL	2.721LL	3.688LL	4.506LL
3					
	PSE Auction	-0.388	-0.160	-1.553	-1.378
	PSE Direct	0.313	0.297	0.134	-0.228
	SCP	2.766LL	-0.132	3.057LL	-0.057
4					
	PSE Auction	1.213	2.101L	1.262	1.974
	PSE Direct	0.205	0.602	0.451	0.910
	SCP	3.348LL	5.180LL	3.300LL	4.871LL
NOT TRADED					
	PSE Auction	0.679	0.479	0.679	0.479
	PSE Direct				
	SCP	0.395	-0.415	0.230	0.272

MARKET SEGMENT					
A1					
	PSE Auction	-2.717HH	-3.893HH	-2.912HH	-4.080HH
	PSE Direct	-0.971	-0.110	-1.650	0.685
	SCP	3.639LL	5.368LL	2.378L	2.342L
GROUPING:		**UNWEIGHTED DATA**		**WEIGHTED DATA**	
CATEGORY:		Wilcoxon	t-test (time trend)	Wilcoxon	t-test (time trend)
A2					
	PSE Auction	0.146	-0.348	-0.291	-0.345
	PSE Direct	-0.631	-0.476	0.485	0.521
	SCP	3.203LL	5.792LL	2.766LL	4.156LL
B2					
	PSE Auction	0.825	0.307	0.582	0.044
	PSE Direct	2.087L	2.688LL	2.281L	3.026LL
	SCP	3.882LL	4.702LL	3.542LL	3.485LL
C2					
	PSE Auction	-1.068	-1.119	-1.262	-1.324
	PSE Direct	1.990L	1.713	2.475L	1.961L
	SCP	3.591LL	3.143LL	2.669LL	2.745LL
C3					
	PSE Auction	2.378L	1.468	0.971	1.451
	PSE Direct	-1.225	-0.079	-1.225	-0.079
	SCP	1.601	-0.230	1.553	-0.157
FIRMS/FUNDS					
FIRMS					
	PSE Auction	0.049	-0.341	-2.766HH	-3.614HH
	PSE Direct	1.650	1.353	-0.534	1.089
	SCP	3.494LL	2.605LL	2.863LL	3.998LL
FUNDS					
	PSE Auction	-0.243	-0.520	-0.582	-0.780
	PSE Direct	-1.262	-2.047H	-1.407	-1.669
	SCP	3.737LL	2.812LL	3.397LL	2.585LL

Source of data: Czech Securities Exchange Commission

A.11 VAR models of price differences

GROUPING:		UNWEIGHTED DATA				WEIGHTED DATA			
CATEGORY:	DEP. VARIABLE	PSE Auction (-1)	PSE Direct (-1)	SCP (-1)	Block Exogeneity (F-test)	PSE Auction (-1)	PSE Direct (-1)	SCP (-1)	Block Exogeneity (F-test)
ALL AVERAGED									
	PSE Auction	0.925**	0.053	-0.001	0.625	0.941**	-0.020	0.004	1.052
	PSE Direct	1.375**	0.238	-0.004	7.951**	1.445	0.341	0.020	3.450*
	SCP	20.938*	-0.941	0.148	5.172*	11.142*	-0.203	0.576**	2.306
SIZE GROUPED									
BIGGEST									
	PSE Auction	1.113**	-0.077	0.002	1.404	0.866**	-0.026	0.007*	2.916
	PSE Direct	2.622**	-0.137	0.006	12.109**	2.200	0.316	0.026	2.989
	SCP	13.322	-3.204	0.761**	1.957	13.636*	-0.422	0.561**	2.726
2									
	PSE Auction	0.750**	0.191	0.001	0.741	0.814**	0.143	0.001	0.449
	PSE Direct	1.102**	-0.031	0.000	8.657**	1.052**	-0.272	0.007	13.100**
	SCP	4.808	3.635	0.525**	3.137	6.607	3.012	0.502**	3.170
3									
	PSE Auction	0.861**	0.005	0.004	0.871	0.899**	-0.002	0.003	0.433
	PSE Direct	2.035*	0.357	-0.018	3.711*	1.473*	0.423*	-0.015	3.653*
	SCP	17.941**	0.660	0.246	5.512*	19.323**	0.417	0.256	5.132*
4									
	PSE Auction	0.594**	0.109	0.007	1.842	0.525**	0.198	0.007	2.024
	PSE Direct	0.844*	0.019	0.012	4.596*	0.521*	0.070	0.009	3.657*
	SCP	10.352*	0.596	0.302	2.838	9.447	1.571	0.306	2.404
SMALLEST									
	PSE Auction	0.915**	0.061	0.000	0.422	0.893**	0.116	0.000	0.629
	PSE Direct	0.763**	0.163	0.000	4.222*	0.396*	0.250	0.001	2.512
	SCP	30.031*	-0.935	-0.147	4.015*	24.298	2.760	-0.132	3.692*
TRADING FREQ.									
TRADED									
	PSE Auction	0.851**	0.062	0.001	0.878	0.930**	-0.019	0.004	0.956
	PSE Direct	1.061**	0.033	0.025	10.426**	1.462	0.344	0.022	3.317
	SCP	9.047*	-2.346	0.760**	2.004	10.306*	-0.211	0.617**	2.064
2									
	PSE Auction	0.811**	-0.096	0.009	1.193	0.865**	-0.340	0.017	1.797
	PSE Direct	0.831	0.056	0.001	1.159	0.626**	-0.273	0.012	8.221**
	SCP	10.313	13.773	-0.139	7.648**	10.507*	-3.868	0.482*	2.203

GROUPING:		UNWEIGHTED DATA				WEIGHTED DATA			
CATEGORY:	DEP. VARIABLE	PSE Auction (-1)	PSE Direct (-1)	SCP (-1)	Block Exogeneity (F-test)	PSE Auction (-1)	PSE Direct (-1)	SCP (-1)	Block Exogeneity (F-test)
3									
	PSE Auction	0.892**	0.123	0.000	1.780	0.980**	0.117	0.000	0.798
	PSE Direct	1.267**	-0.536	0.001	5.130*	0.717*	-0.245	0.003	2.274
	SCP	20.352	41.407	-0.079	0.504	0.661	51.724	-0.262	2.014
4									
	PSE Auction	0.639**	0.032	0.074	1.214	0.467**	0.222	0.104**	4.836*
	PSE Direct	0.614	0.069	-0.002	2.637	0.121	0.136	0.037	2.548
	SCP	3.924**	-0.218	0.007	14.531**	3.243**	-0.223	0.162	7.075**
NOT TRADED									
	PSE Auction								
	PSE Direct								
	SCP								
MARKET SEGMENT									
A1									
	PSE Auction	0.833**	-0.026	0.008	1.719	0.769**	-0.018	0.009*	3.094
	PSE Direct	2.269*	-0.091	0.088**	10.753**	1.996	0.341	0.062	2.345
	SCP	9.147*	-1.283	0.877**	2.169	13.967*	-0.141	0.493*	2.494
A2									
	PSE Auction	0.853**	0.022	0.005	0.424	0.892**	-0.019	0.005	0.986
	PSE Direct	0.721*	0.089	0.020	10.366**	0.633*	-0.012	0.021**	18.362**
	SCP	6.821	-1.686	0.711**	1.186	8.682	-1.282	0.617**	1.630
B2									
	PSE Auction	0.401*	0.500*	-0.003	4.100*	0.366	0.454	0.005	2.745
	PSE Direct	0.374	0.068	0.034*	4.476*	0.185	0.458*	0.010	2.100
	SCP	2.014	3.396	0.632**	1.241	2.352	4.661	0.663**	1.032
C2									
	PSE Auction	0.927**	-0.023	0.004	1.597	0.867**	0.000	0.004	1.005
	PSE Direct	0.920	0.165	0.022	4.851*	0.669	0.372	0.009	2.793
	SCP	18.443**	-0.194	0.238	4.528*	22.835**	2.094	0.084	6.262**
C3									
	PSE Auction								
	PSE Direct								
	SCP								

GROUPING:		UNWEIGHTED DATA				WEIGHTED DATA			
CATEGORY:	DEP. VARIABLE	PSE Auction (-1)	PSE Direct (-1)	SCP (-1)	Block Exogeneity (F-test)	PSE Auction (-1)	PSE Direct (-1)	SCP (-1)	Block Exogeneity (F-test)
FIRMS/FUNDS									
FIRMS									

	PSE Auction	0.965**	0.069	-0.004	1.163	0.963**	-0.015	0.003	0.673
	PSE Direct	1.220**	0.335	-0.007	6.030**	1.916	0.400*	-0.002	3.041
	SCP	19.516*	0.347	-0.020	5.947**	11.495*	0.173	0.461*	2.845
FUNDS									
	PSE Auction	0.515*	0.080	0.007	2.345	0.596*	0.049	0.005	1.280
	PSE Direct	2.120**	-0.009	-0.004	13.869**	2.402**	-0.046	0.000	9.911**
	SCP	5.703	3.458	0.663**	1.923	7.858	2.604	0.660**	1.728

Source of data: Czech Securities Commission

ANNEX 2: A BRIEF ASSESSMENT OF THE FINANCIAL PERFORMANCE OF EXCHANGE LISTED CZECH FIRMS

This annex examines the financial statements of publicly traded companies during the 1993-97 period. It assesses whether the financial performance of these enterprises is consistent with the assumption that enterprises have been restructuring, and investigates the role of disclosed financial information in explaining the status of market prices. For the study, financial statement data for approximately 1200 companies were obtained covering the period 1993-1997, ending December 31. However, the sample was restricted to only 425 firms, mainly due to lack of consistency and reliability of the data set. It is still possible that quality of data may contain flaws and that several enterprises do not comply with accounting standards. In particular, the income statement numbers analyzed below should be interpreted with caution.

The firms included in the sample were divided into four distinct segments in order to provide a better insight into the effect of firm size which display distinct characteristics in market price behavior. Table 1 below shows the criteria for determining the firm size benchmarks used throughout the section: The values in the columns represent the minimum Czech Krone amounts for each of the size groups and correspond to the 25%, 50% and 75% quartiles for medium, large and largest size groups, respectively.

Table 1: Company Size: Quartiles of Total Assets and Total Sales in Defining Size Segments

Basis	Year	Size			
		Largest	Large	Medium	Small
Total Assets	1993	1,145,150	401,367	164,086	the rest
	1994	1,062,586	381,923	147,903	the rest
	1995	1,083,651	386,754	144,391	the rest
	1996	1,125,610	404,100	155,897	the rest
	1997	1,216,869	423,826	161,764	the rest
Total Sales	1993	883,569	311,495	128,869	the rest
	1994	872,663	287,689	117,004	the rest
	1995	830,671	307,537	120,437	the rest
	1996	865,199	320,070	126,508	the rest
	1997	930,918	319,069	125,143	the rest

Source of data: Aspekt Kilcullen Data, July 1998.

Table 2 shows classification of industry segments based on PSE industry structures. In order to analyze the financial situation of exchange-traded firms by their area of specialization, five industry groups were formed based on the PSE industry definitions. There are 19 industries according to the PSE grouping; these were combined to yield five major industry groups as defined in the following table. The analysis excludes financial services industry altogether (Finance, Banking and Investment Funds).

Table 2: Industry Segments Based on PSE Industry Structure

Industry segment	PSE Industry
Branded Consumer Goods	Agriculture
	Food Production
	Production of Beverages & Tobacco
	Glass, Ceramics & Jewellery
Business Services & Trade	Services
	Trade
	Transportation
	Utilities
Engineering & Machinery	Electrical Engineering
	Mechanical Engineering
General Corporates	Building & Construction
	Textiles
	Wood & Paper
	Other
Mining, Metallurgy & Chemicals	Chemicals & Pharmaceuticals
	Mining
	Metallurgy
Financial Service (excluded from analysis)	*Finance & Banking*
	Investment Funds

Source: Prague Stock Exchange.

To construct Tables 3 and 4, financial statements were adjusted to reflect a common, simplified structure. Therefore, the attached tables present, by size and for all firms as well as by industry group, the compositions of a typical balance sheet and income statement and their evolution over the transformation period. The entries in each table correspond to size-weighted averages over the particular group of firms. In Table 3, balance sheet items are expressed as percentage of total assets to reflect any trends among the listed Czech firms over a period of 5 years in the financial structure of balance sheets, or the income statement items are expressed as a percentage of total sales to reflect the way in which listed Czech companies relate their operational costs in relationship to their sales figures.

Table 3 shows that largest and large category of firms relative to the total sample size have significantly higher proportion of fixed assets in their balance sheets than firms in other size categories. They have correspondingly lower proportion of current assets, particularly cash and short-term accounts receivable and inventories. This indicates that they may rely on, and have a better access to, the external sources of capital (equity or debt) than medium and small size firms. But the data for smaller firms show that over the years they increased their cash account levels significantly, and their accounts receivable also increased.

Smaller firms have been attempting to increase their business activity during the current recessionary environment by extending term sales, as can be seen by the increase in accounts receivable, while having to increase cash positions. This may be one reason for the lack of liquidity for the smaller and medium firms. Also, on the liabilities side, smaller firms have used more short term liabilities to finance their inventory purchases. The existence of high levels of short term capital in the financial structure suggests that short term liabilities have become a part of the permanent capital structure, giving potential signals of a mismatch between the maturities of liabilities and assets. On average, the relative size of current assets decreased slightly over time, mainly due to the decrease in inventory levels overweighing the minor increases in cash and short-term accounts receivable. However, the important issue to note is that the increase in short-term accounts receivables is most significant for small and medium firms.

Firms in all size categories show significant decreases in the ratio of total equity to total liabilities, or of increasing financial leverage. This is particularly important in the case of the largest firms. While all firms exhibit increasing proportion of total bank debt, increase in long-term bank debt is less pronounced and firms thus rely more on short-term financing, as reflected in the increasing proportion of current liabilities in their balance sheets. Also significant is an increase in the short-term accounts payable, especially for medium and small firms. Largest firms were relatively successful in raising new debt finance in the form of long-term payables and bonds.

Table 4 shows common size income statements of all publicly traded Czech firms. The table shows that only the largest firms show positive and larger percentage of net income to sales ratios, while all other sizes show a significant lack of net profits which deteriorated significantly in 1996, and did not recover in 1997. The deterioration is more pronounced for large, medium and smaller firms as compared to the largest firms. The slowdown in general economic activities has brought the gross margins down while leading to the further shrinkage of operational margin, which is attributable mainly due to the relative increase in salaries. Increase in Interest Paid connected to the growing indebtedness of the firms then further pushed the EBT down in the recent years, especially for small firms.

Tables 5 and 6 include comparative financial ratios of the studied firms. The analysis was conducted separately for firms of different size and for whole sample of firms as well as for individual industry groups. The reported ratios provide insight on the liquidity, asset management, leverage and profitability of the exchange-traded firms and illustrate their evolution during the course of the economic transformation in the Czech Republic. Each entry in these tables shows median of the particular financial ratio in a given group of firms.

As shown in Table 5, all firms show decreasing liquidity and increasing leverage, as indicated by the current, quick and debt to equity ratios. While the inventory turnover increased for all firms, fixed assets turnover decreased for largest firms and improved considerably for small firms only. Total asset turnover, however, did not change significantly for any of the size categories. The ratios of Total Assets Turnover and Fixed Assets Turnover are a measure of the degree to which a firm utilizes its assets efficiently. While the ratio may differ from sector to sector, a rule of thumb suggests a Total Asset Turnover ratio of more than twice the invested assets would be an agreeable target for such a ratio. The Fixed Assets Turnover ratio would have to be higher than that of the Total Assets Turnover, since the calculation of this ratio excludes the Current Assets. From Tables 5 and 6, between 1993 and 1997, none of the firms show Total Asset Turnover ratios above 1, except for the largest firms in the Branded Consumer Goods sector. This suggests that the assets in the Czech firms do not generate a productive level of output and therefore do not justify the amount of capital invested in them. To improve the situation, the firms must either reduce their asset size, or increase their productivity, using the same or lesser number of employees.

The poor performance of Czech firms can also be seen by looking at the Return on Assets (ROA) and Return on Equity (ROE) ratios. The ROEs improve temporarily in 1995, but only to drop abruptly in 1996, and to recover very partly in 1997. The Profitability of the largest firms is on average substantially higher than the profitability of smaller firms, but is also very low in magnitude, as indicated by nominal ROEs lower than the rate of PPI inflation and lower than the risk-free interest rate. These results do not suggest strong corporate governance and/or extensive restructuring.

Tables 5 and 6 also report the market valuation of the firms and the links between fundamental aspects of their financial situation and their market value. These ratios are computed by size groups

and for all firms. Market prices were missing in some periods for several companies due to non-trading and the numbers of firms on which the market value ratios were computed are correspondingly lower. Again, the median value of the particular indicator is shown in each table.

The low profitability of Czech firms is clearly reflected in their market valuation, as documented by price-earnings (P/E) and Market-to-Book value ratios that are low and falling over time. All size segments were affected, with the effects being less significant for largest firms. Indeed, the low P/Es are entirely consistent with the levels that would predicted from theory—in an environment of low ROEs (relative to the average interest rate), low pay-out ratios (most Czech firms did not pay any dividends), the P/Es are expected to be low. In addition, the uncertainty regarding the medium and small firms (dominated by a large shareholder, which in many cases abuses its position of power) has increased the perceived risk of investing in these enterprises and has tended to depress P/Es for these firms even further (see Leibowitz et al (1996)). These results indicate that the restructuring task is largely unfinished, and that there is a need to strengthen regulations in the capital market, and in the corporate and banking sectors.

Table 3: Common Size Balance Sheets of Exchange Traded Czech Companies – All Firms

	1993				1994				1995				1996				1997			
Size	largest	large	medium	small	largest	large	medium	small	largest	large	medium	small	largest	large	medium	small	largest	large	medium	small
Number of Firms in Sample	82	81	83	85	95	92	96	96	102	102	102	102	107	106	106	105	101	104	97	100
Net Fixed Assets	67.5%	54.1%	53.0%	56.5%	63.9%	55.7%	55.1%	55.0%	64.8%	57.3%	55.8%	56.5%	67.1%	58.7%	54.6%	55.1%	68.7%	56.6%	56.2%	55.8%
LT Accounts Receivable	0.5%	1.2%	0.9%	0.9%	0.5%	1.5%	1.1%	1.7%	1.0%	1.0%	1.0%	1.0%	0.8%	0.7%	1.1%	1.3%	1.0%	1.3%	1.3%	2.0%
Current Assets, of which	32.0%	44.6%	46.1%	42.6%	35.5%	42.9%	43.7%	43.4%	34.2%	41.7%	43.2%	42.6%	32.1%	40.6%	44.4%	43.6%	30.3%	42.0%	42.5%	42.3%
Cash	3.7%	3.6%	4.8%	5.5%	4.4%	4.8%	5.8%	8.4%	9.2%	4.0%	5.3%	8.0%	5.6%	3.5%	4.6%	7.0%	5.0%	3.8%	4.2%	6.9%
ST Accounts Receivable	12.8%	17.6%	17.6%	16.9%	17.5%	17.7%	16.6%	18.2%	12.1%	16.8%	18.2%	17.3%	12.8%	16.2%	19.2%	19.3%	11.6%	18.7%	18.7%	19.3%
Inventory	13.2%	20.0%	20.8%	18.7%	10.0%	19.4%	20.1%	16.0%	9.3%	19.5%	18.5%	16.2%	10.4%	19.8%	19.3%	16.0%	9.8%	17.9%	18.1%	14.9%
Other Assets – Accruals	2.3%	3.5%	2.9%	1.4%	3.6%	1.0%	1.2%	0.9%	3.6%	1.4%	1.1%	1.0%	3.3%	1.1%	1.3%	1.4%	4.0%	1.6%	1.4%	1.2%
Total Assets	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total Equity, of which	66.6%	65.2%	63.4%	70.4%	60.6%	64.8%	64.8%	74.2%	62.0%	63.1%	62.4%	73.5%	57.3%	59.8%	55.5%	70.1%	53.8%	57.3%	54.0%	68.5%
Retained Earnings	5.3%	-0.4%	2.3%	2.4%	5.2%	-3.0%	0.6%	2.5%	6.2%	-2.2%	-1.5%	1.0%	8.4%	-4.0%	-7.9%	-1.9%	7.5%	-4.7%	-13.5%	-2.8%
Current Liabilities, of which	22.7%	26.7%	29.9%	24.4%	27.6%	25.9%	26.9%	19.7%	24.7%	26.8%	27.6%	18.8%	27.9%	30.2%	32.7%	21.9%	27.9%	32.0%	32.9%	22.6%
ST Accounts Payable	16.0%	12.8%	12.3%	10.4%	19.9%	12.9%	15.3%	11.9%	15.6%	13.5%	16.1%	12.2%	17.4%	14.3%	18.3%	14.6%	17.3%	16.0%	18.2%	15.1%
Other Liabilities – Accruals	1.2%	3.5%	8.3%	10.1%	2.5%	1.6%	1.4%	1.0%	2.2%	1.6%	1.2%	1.0%	2.8%	1.5%	1.5%	1.5%	3.2%	1.7%	1.4%	2.0%
ST Bank Debt	5.5%	10.3%	9.3%	3.9%	5.3%	11.4%	10.1%	6.8%	6.9%	11.7%	10.3%	5.6%	7.7%	14.4%	12.9%	5.8%	7.4%	14.3%	13.3%	5.5%
Total Bank Debt, of which	12.3%	17.7%	18.3%	8.2%	10.8%	18.7%	16.7%	10.4%	13.7%	19.3%	17.2%	9.8%	14.7%	21.4%	21.6%	10.2%	15.3%	20.9%	23.3%	10.4%
LT Bank Debt	6.8%	6.2%	5.9%	2.3%	5.5%	7.0%	6.3%	3.5%	6.8%	7.7%	6.9%	4.2%	7.0%	7.0%	8.7%	4.4%	7.9%	6.6%	10.1%	5.0%
Other Liabilities, of which	3.9%	1.9%	0.8%	2.8%	6.2%	2.3%	2.1%	2.6%	6.6%	2.4%	3.2%	3.6%	7.7%	3.0%	3.2%	3.7%	10.4%	4.1%	2.9%	4.0%
LT Payables and Bonds	1.8%	1.4%	0.3%	1.7%	3.7%	1.4%	0.9%	0.8%	4.0%	1.3%	1.9%	1.3%	4.9%	1.7%	1.9%	1.2%	6.9%	2.5%	1.4%	1.2%
Reserves	2.1%	0.5%	0.5%	1.1%	2.5%	0.9%	1.1%	1.8%	2.6%	1.1%	1.2%	2.3%	2.9%	1.2%	1.2%	2.4%	3.5%	1.6%	1.5%	2.8%
Total Liabilities and Equity	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source of data: Aspekt Kilcullen

Table 4: Common Size Income Statements of Exchange Traded Czech Companies – All Firms

	1993				1994				1995				1996				1997			
Size	largest	large	medium	Small	Largest	large	medium	small	largest	large	medium	small	largest	large	medium	small	largest	large	medium	small
Number of Firms in Sample	82	81	83	85	95	92	96	96	102	102	102	102	107	106	106	105	101	104	97	100
Net Sales	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Less: Cost of Goods Sold	66.2%	72.3%	67.2%	61.0%	70.6%	71.4%	66.8%	59.1%	69.9%	70.6%	64.6%	62.4%	71.0%	72.4%	65.9%	66.0%	71.3%	70.0%	64.7%	63.4%
Gross Margin	33.8%	27.7%	32.8%	39.0%	29.4%	28.6%	33.2%	40.9%	30.1%	29.4%	35.4%	37.6%	29.0%	27.6%	34.1%	34.0%	28.7%	30.0%	35.3%	36.6%
Less: Salaries &Administrative	11.1%	17.4%	20.3%	29.0%	9.8%	17.2%	21.3%	29.5%	10.6%	17.4%	23.4%	29.7%	11.5%	18.4%	24.1%	29.5%	11.5%	18.5%	24.8%	32.2%
Less: Other Expenses	2.2%	-0.7%	-0.5%	1.6%	2.5%	1.2%	1.0%	0.3%	1.6%	1.0%	1.2%	-3.5%	1.5%	0.8%	0.0%	-0.1%	1.1%	1.9%	-0.1%	0.4%
Operating Margin	20.5%	10.9%	12.9%	8.4%	17.1%	10.2%	10.9%	11.0%	17.9%	10.9%	10.8%	11.4%	16.0%	8.4%	10.0%	4.7%	16.1%	9.6%	10.6%	4.1%
Less: Depreciation	6.0%	6.1%	7.0%	9.9%	5.7%	5.7%	7.2%	9.9%	5.9%	6.0%	8.1%	7.9%	7.1%	6.0%	8.1%	7.9%	7.7%	6.5%	8.0%	7.7%
EBIT (Net Operating Income)	14.5%	4.9%	6.0%	-1.5%	11.4%	4.5%	3.7%	1.1%	11.9%	4.9%	2.7%	3.5%	8.8%	2.4%	1.9%	-3.2%	8.5%	3.1%	2.6%	-3.7%
Less: Net Financial Costs	2.2%	4.1%	4.9%	4.2%	1.7%	2.9%	2.4%	10.4%	2.5%	4.1%	2.1%	2.1%	2.4%	3.1%	0.9%	4.0%	3.7%	11.2%	3.8%	3.7%
of which: Interest Paid	0.9%	0.7%	0.3%	0.1%	1.1%	0.5%	0.3%	2.5%	1.7%	0.9%	0.3%	0.2%	2.4%	3.1%	5.1%	2.2%	3.0%	6.1%	3.3%	4.1%
Earnings Before Taxes	12.2%	0.8%	1.1%	-5.7%	9.6%	1.6%	1.3%	-9.3%	9.4%	0.8%	0.6%	1.3%	6.4%	-0.7%	1.0%	-7.3%	4.7%	-8.1%	-1.1%	-7.3%
Less: Income Tax	6.2%	0.9%	0.7%	0.5%	4.6%	0.4%	0.5%	0.1%	4.0%	0.3%	0.2%	0.3%	2.7%	0.3%	1.8%	0.4%	2.4%	0.7%	0.8%	0.9%
Net Income	6.0%	-0.1%	0.4%	-6.2%	5.0%	1.2%	0.8%	-9.4%	5.4%	0.5%	0.3%	1.0%	3.7%	-1.0%	-0.8%	-7.7%	2.3%	-8.8%	-1.9%	-8.3%

Source: Aspekt Kilcullen

Table 5:Comparative Financial Ratios for Exchange Traded Czech Companies – All Firms

	1993				1994				1995				1996				1997			
Size	largest	large	medium	small	largest	large	medium	small	largest	large	medium	small	largest	large	medium	small	largest	large	medium	small
Number of Firms in Sample	82	81	83	85	95	92	96	96	102	102	102	102	107	106	106	105	101	104	97	100
Current Ratio	1.570	1.709	1.682	2.454	1.400	1.709	1.858	2.531	1.326	1.535	1.774	2.646	1.164	1.373	1.569	2.244	1.085	1.388	1.551	2.191
Quick Ratio	0.105	0.114	0.167	0.256	0.163	0.103	0.217	0.470	0.149	0.107	0.188	0.430	0.099	0.075	0.134	0.369	0.079	0.069	0.113	0.326
Inventory Turnover	4.437	3.098	3.423	3.945	4.895	3.623	3.998	3.558	4.616	3.526	4.248	4.450	4.840	3.362	4.239	4.546	5.074	3.589	4.900	4.716
Fixed Assets Turnover	1.922	1.829	1.512	0.880	1.830	1.760	1.653	1.249	1.869	1.879	1.649	1.559	1.682	2.060	1.656	1.413	1.691	1.851	1.514	1.343
Total Assets Turnover	0.922	0.918	0.893	0.624	0.959	0.916	0.886	0.708	0.990	0.959	0.919	0.791	0.913	0.910	0.918	0.699	0.936	1.003	0.923	0.709
Total Liabilities/Total Assets	0.343	0.362	0.336	0.189	0.371	0.360	0.316	0.220	0.405	0.394	0.327	0.220	0.446	0.447	0.359	0.256	0.499	0.458	0.354	0.249
EBIT/Interest Paid	2.222	1.436	1.236	1.456	2.491	1.387	1.561	1.325	2.064	1.497	1.036	2.978	1.321	1.083	1.167	0.657	1.221	1.013	1.022	0.424
Debt/Equity	0.521	0.566	0.506	0.217	0.590	0.563	0.463	0.282	0.681	0.649	0.486	0.282	0.804	0.771	0.550	0.339	0.995	0.834	0.520	0.319
Profit Margin on Sales	0.033	0.014	0.013	0.020	0.024	0.010	0.016	0.019	0.025	0.011	0.015	0.013	0.014	0.003	0.008	0.002	0.012	0.002	0.005	0.010
EBIT/Total Assets	0.083	0.050	0.048	0.035	0.063	0.048	0.046	0.039	0.061	0.044	0.035	0.018	0.045	0.031	0.037	0.012	0.046	0.036	0.025	0.017
ROA	0.031	0.011	0.011	0.014	0.022	0.010	0.012	0.012	0.025	0.012	0.013	0.006	0.012	0.003	0.005	0.002	0.016	0.003	0.004	0.007
ROE	0.056	0.019	0.020	0.019	0.044	0.016	0.021	0.015	0.049	0.018	0.019	0.009	0.032	0.005	0.008	0.002	0.033	0.006	0.007	0.012
All firms																				
Number of Firms in Sample	190				235				405				421				136			
Average ROE (unweighted)	2.9				2.4				2.4				1.2				1.5			
Average ROE (weighted)	3.9				3.2				3.5				2.0				2.1			
Market P/E	12.38				16.18				8.05				12.91				12.30			
EPS	42.75				29.06				27.23				9.46				29.03			
P/E	6.62				5.95				5.13				2.54				5.81			
Market Price/Book Value	0.58				0.33				0.25				0.12				0.50			
Relative P/E	0.54				0.48				0.41				0.21				0.47			
By Size	largest	large	medium	small	largest	large	medium	small	largest	large	medium	small	largest	large	medium	small	largest	large	medium	small
EPS	88.75	40.09	18.56	28.24	76.12	22.41	22.54	19.37	71.28	20.82	24.26	13.00	37.42	4.65	13.45	2.38	75.99	3.73	0.40	0.23
P/E	8.77	7.03	3.73	4.27	12.62	8.36	3.78	2.40	7.53	5.44	3.41	3.54	10.73	3.02	1.94	0.98	9.41	2.20	1.04	2.47
Market Price/Book Value	0.98	0.48	0.41	0.50	1.36	0.28	0.23	0.25	0.83	0.20	0.22	0.16	0.68	0.10	0.10	0.07	1.08	0.12	0.14	0.14
Relative P/E	0.54	0.71	0.57	0.30	0.48	1.02	0.68	0.31	0.41	0.61	0.44	0.28	0.21	0.87	0.24	0.16	0.47	0.76	0.18	0.08

Source: Aspekt Kilcullen

Table 6: Comparative Financial Ratios for Exchange Traded Czech Companies Across Sectors in 1997

	Branded Consumer Goods				Business Services and Trade				Engineering and Machinery				General Corporates				Mining, Metallurgy and			
Size	largest	large	medium	small	largest	large	medium	small	largest	large	medium	small	largest	large	medium	small	largest	large	medium	small
Number of Firms in Sample	19	17	16	23	34	23	29	35	16	24	18	16	17	29	25	18	15	11	9	8
Current Ratio	1.107	1.213	1.587	2.198	0.973	1.381	1.683	1.990	1.267	1.229	1.430	2.242	1.206	1.435	1.551	2.098	1.005	1.301	2.075	4.126
Quick Ratio	0.068	0.060	0.096	0.203	0.145	0.046	0.195	0.266	0.067	0.061	0.073	0.210	0.048	0.078	0.146	0.444	0.068	0.061	0.344	0.629
Inventory Turnover	5.058	4.765	6.035	5.326	34.522	7.163	13.294	7.250	2.670	2.530	2.326	1.781	4.468	3.334	3.591	4.675	5.979	3.612	4.373	2.179
Fixed Assets Turnover	1.916	2.276	1.161	1.510	1.317	1.928	1.514	0.854	2.177	1.824	1.950	1.201	2.182	1.824	1.484	1.468	1.607	1.688	1.700	0.945
Total Assets Turnover	1.151	1.058	0.775	0.948	0.866	1.018	0.931	0.642	0.865	0.859	1.003	0.560	0.788	1.047	0.856	0.831	0.958	0.917	1.031	0.560
Total Liabilities/Total Assets	0.548	0.491	0.296	0.242	0.464	0.512	0.311	0.294	0.563	0.543	0.485	0.220	0.506	0.387	0.372	0.218	0.530	0.425	0.332	0.137
EBIT/Interest Paid	1.347	0.479	-0.110	1.247	2.270	0.991	1.014	0.280	0.696	0.555	0.064	-0.368	0.803	1.287	1.925	0.627	0.861	0.593	1.029	-1.942
Debt/Equity	1.211	0.965	0.384	0.319	0.867	1.051	0.452	0.359	1.299	1.106	0.855	0.255	1.026	0.630	0.582	0.280	1.129	0.740	0.498	0.160
Profit Margin on Sales	0.009	-0.012	0.014	0.017	0.029	0.004	0.008	0.004	0.003	-0.004	-0.038	-0.017	0.011	0.015	0.010	0.012	0.003	0.003	0.008	0.058
EBIT/Total Assets	0.072	0.024	0.031	0.022	0.052	0.039	0.027	0.012	0.033	0.022	0.007	0.016	0.035	0.052	0.025	0.011	0.012	0.024	0.049	0.039
ROA	0.009	-0.015	0.011	0.007	0.021	0.004	0.004	0.006	0.003	-0.005	-0.034	-0.005	0.002	0.011	0.009	0.007	0.004	0.001	0.010	0.011
ROE	0.026	-0.025	0.020	0.013	0.046	0.008	0.006	0.012	0.010	0.003	-0.047	0.013	0.039	0.019	0.014	0.008	0.010	0.002	0.013	0.014
Number of Firms in Sample	22				41				25				30				18			
EPS	25.07				109.24				0.29				35.38				20.20			
P/E	6.71				9.83				4.11				1.51				2.32			
Market Price/Book Value	0.74				1.45				0.14				0.25				0.21			
Relative P/E	0.54				0.79				0.33				0.12				0.19			
By Size	largest	large	medium	small	largest	large	medium	small	largest	large	medium	small	largest	large	medium	small	largest	large	medium	small
EPS	181.09	3.56	-116.39	-4.69	156.62	30.86	0.40	14.51	11.27	-157.00	-467.63	-4.10	71.24	40.39	5.79	-92.16	19.01	68.28	74.58	-166.59
P/E	8.08	7.08	-472.03	2.50	10.82	5.15	2.14	244.33	14.35	-0.10	7.13	-14.66	1.29	2.16	1.14	-0.07	3.58	3.30	1.04	3.78
Market Price/Book Value	2.17	0.32	0.45	0.52	1.80	0.30	0.30	0.18	0.51	0.05	0.13	0.06	0.54	0.13	0.09	0.32	0.38	0.23	0.08	0.08
Relative P/E	0.65	0.57	-38.13	0.20	0.87	0.42	0.17	19.74	1.16	-0.01	0.58	-1.18	0.10	0.17	0.09	-0.01	0.29	0.27	0.08	0.31

Source: Aspekt Kilcullen

ANNEX 3: HARMONIZATION OF LEGISLATION IN SECURITIES WITH EU DIRECTIVES

Introduction

The Two Stages of the White Book on Accession

The European Directives define the minimum conditions each Member State has to meet in order to qualify for participation in the internal market. Participation includes freedom of establishment and freedom to provide cross-border services without further authorisation, on the principle of "home" country supervision of activities in "host" countries. The Member States must bring into force the laws, regulations and administrative provisions necessary for them to comply with the Directives.

The Directives are, however, designed to achieve the progressive harmonisation of laws and regulations in the Member States and the formalities of harmonisation are specified in the EU "White Book" of accession. Under the White Book, pre-accession legislative tasks are divided into two stages. Stage One is mainly concerned with primary market activity, relating to listings, public offerings, corporate disclosure and certain aspects of UCITS promotion. Stage one is also concerned with measures directed at the suppression of insider dealing and money laundering and the provision of investor compensation. Stage Two is mainly concerned with the operation of the Investment Services Directive, including regulation of public markets and the providers of investment services, plus several activities regulated under the UCITS directives. Stage Two also covers capital adequacy and prudential regulation.

Table 3.1: The Most Important Directives on Securities in the Pre-Accession Period

STAGE ONE
79/279 ON STOCK EXCHANGE LISTING PARTICULARS
85/611 ON UNDERTAKINGS FOR COLLECTIVE INVESTMENT IN TRANSFERABLE SECURITIES
88/627 ON NOTIFICATION OF MAJOR HOLDINGS
89/298 ON PUBLIC OFFERING PROSPECTUSES
89/592 ON INSIDER DEALING
STAGE TWO
93/22 ON INVESTMENT SERVICES IN THE FINANCIAL FIELD
93/6 ON CAPITAL ADEQUACY

The financial service and related directives are based on the principles stated in *The European Code of Conduct relating to transactions in transferable securities,* 1977. Although they are worded in general terms, the directives provide clear definitions and specify where they must be mandatorily be applied as they are, where stricter rules may be imposed, or where Member States may grant "derogations". The Annexes to the directives contain the specific and practical requirements which Member States must fulfil.

Competent Authorities

Key among the administrative provisions is the specification and empowerment under the national law of the "competent authorities" for regulation of the activities specified in the directives. For example, the Admissions Directive provides that the admission of a security to official stock exchange listing is subject to the authorisation granted by the competent authority designated by each Member State. Such competent authorities need to be statutorily empowered in order to possess "such powers as may be necessary to exercise [their] duties", and there needs to be a right of appeal against decisions or actions taken under such powers, without prejudice to the independence of the competent authority.

The creation of the Securities Commission of the Czech Republic, under the Securities Commission Act --/1998 is an important step in harmonising Czech administrative structures to EU requirements. From April 1, 1998, the Commission has taken on the responsibilities for State Supervision specified in the Securities Act and previously undertaken by the Ministry of Finance. Its jurisdiction includes the investment management activities of pension funds and insurance companies. It also licences and regulates the provision of settlement services. Although the Commission does not have regulatory independence (regulations still have to be issued as Government Decrees), it has substantial enforcement powers--it has powers to intervene and punish misconduct or malfunction in the market, and also powers to apply "fit and proper" tests in the application of a license. Also, the Commission is not constrained by public sector wage scales, and is able to attract high quality professionals.

The Commission is statutorily required to co-operate with other supervisory bodies within the Czech Republic and internationally, and it is intended to play a major role in developing the legal framework for the primary and secondary markets and in the implementation of the existing laws through regulations to be issued by the Council of Ministers.

The Commission may be regarded as the competent authority for public offers of stock, for UCITS, for investment services, and for capital adequacy - the four major components of the single market in securities business - and also for the enforcement of the law on insider dealing. It does not have a role in the enforcement of the law against money laundering (which is primarily for the police, but with the support of the Financial Analytic Unit of the Ministry of Finance). The Commission does authorise public offerings and licence "publicly tradable stock", but listing requirements are left entirely to the Prague Stock Exchange over which the Commission's direct powers are limited.

Stage One Measures

The EU Regime for Regulation of Listing and Public Issues

The EU regime for new issues, listing and prospectuses, is of particular importance to the Czech Republic because of the peculiarities of the Czech regime for "publicly traded companies", created for mass privatisation.

The EU started by regulating listing, then public offers, and then combined the two together, making prospectuses and listing particulars virtually the same. The foundation for the EU regime was the **"Admissions Directive" 79/279** "co-ordinating the conditions for the admission of securities to official stock exchange listing", which stipulates the minimum standards for listing corporate issues on recognised stock exchanges (that is to say, stock exchanges recognised within the European Union for

the purposes of permitting stock listing in one exchange to be traded in any of the others without the need for additional listing). The directive sets the minimum conditions to provide equivalent investor protection at the EU level. It has been supplemented by other directives, including the "Co-ordination" Directive (80/390); the Mutual Recognition Directive (87/345); the Public Offers Directive (89/298); and the Listing and Prospectus Directive (90/211).

The Co-ordination Directive 80/390 co-ordinates the requirements for the drawing up, scrutiny and distribution of listing particulars. The directives provides that the admission of a security to official stock exchange listing is subject to the approval of the competent authority and lays down the conditions for being accepted. These cover the disclosure requirements, minimum capital and provisions relating to governance.

The Mutual Recognition Directive 87/345, sets out the conditions for securities to be admitted simultaneously, or within a short interval, to official listing on stock exchanges in two or more Member States, introducing the concept of "Home" country and "Host" country. It also allows the EU to enter into mutual recognition agreements with non-member states where the rules of the non-member state meet the requirements of the Directive, subject to reciprocity, and subject to the non-member state affording investors the same protection as that provided by the Directive. The Directive permits approval by a Home state to suffice for a security to be listed in another, "host" state, but allows the host to require additional information pertinent to its own jurisdiction, particularly information relating to the income tax system, the appointment of local paying agents, and the method of disclosure of information to stock holders.

Not all listings are associated with public offers of stock; nor is all publicly offered stock necessarily listed. In the **Public Offers Directive 89/298**, the EU provided for the single market in public offerings, extending the obligation to publish a prospectus when any transferable securities are offered to the public. The Directive introduces the concept of "public offer" though it leaves its precise definition to the national law of the Member States. Any offer of transferable securities to the public must be accompanied by a prospectus which has been approved by the competent authority which must also scrutinise marketing material associated with the offer. The prospectus must be published in one or more newspapers or be available as a brochure free of charge as a brochure at the office of the offeror and of the offeror's paying agents.

The Directive covers listed and non-listed securities and it puts issuers of publicly offered securities under the supervision of the competent authority. It also provides for agreements between the EU and non-member states in respect of public offers that are similar in effect to the agreements that may be made in respect of listing. Prospectus and listing requirements are put on an equal footing in that a prospectus must be published when transferable securities are admitted to stock exchange listing, and when transferable securities are subject to an initial public offering, whether by way of primary or secondary offering and whether or not they are going to be listed afterwards. Where publicly offered securities are to be admitted to listing on a stock exchange, information similar to that required by 80/390 must be provided, but where they are not to be officially listed, less detailed information may be required.

The connection between prospectus requirements and listing requirements was drawn closer together by the **Listing and Prospectus Directive 90/211**, which said that a prospectus issued in one Member State, if drawn up to the standards of listing particulars in that state, could serve as the listing particulars for admission to a stock exchange listing in another member state.

The Admissions Directive and its associates are similar to national laws in developed markets, in providing for full and timely disclosure subject to regulatory oversight, so their adoption does not necessarily require substantial amendment to the existing national law for prospectuses and listing. The directives do, however, differ in the wide range of exemptions that they afford. Competent authorities can, for example, authorise omissions of material information from listing particulars if they consider that it is not significant or that disclosure would be contrary to the public interest or detrimental to the issuer. There are also a number of exclusions from the public offer directive (89/298). It is not applicable where transferable securities are offered to a restricted circle of persons, where the selling price of all the securities offered is less than XEU40,000, or where the minimum subscription is for a consideration of at least XEU 40,000 per investor, or where the securities offered are used for a takeover or merger, or where they are capitalisation issues, or where they arise by exercise of conversion or exchange for existing shares.

The Czech Regime for Listing and Public Issues

Listing and public issues are mainly covered by the Stock Exchange Act 214/1992, the Securities Act 591/1992, the Securities Commission Act xx/1998, and the Commercial Code 513/1991.

Under the Stock Exchange Act, listing is a private matter between the Exchange and the issuer, but, under the Securities Act, only "publicly tradable" securities can be traded on public markets, and being traded on a public market requires a licence from State Supervision (with the exception of State bonds). The concept of a "public trading licence" for public markets in general is similar to listing for stock exchange markets, and the regulatory provisions are rather similar. Just as an application for listing requires a prospectus, so too does an application for a public trading licence.

Securities that are going to be publicly tradable cannot be publicly offered unless they have been licensed, and applications for licences must be accompanied by a prospectus. There are no exclusions from this requirement, which is restrictive compared to the directives. The law is unclear as to whether a non-public offer (e.g. by way of rights) requires a prospectus if the new stock is to be publicly tradable (the directives provide only that where an offer is for part only of a single issue, Member States need not require that any other prospectus be published). If, in the Czech Republic, a prospectus is required for a rights issue, then it is unduly onerous on issuers as too is the absence from the Czech regime of the exclusions provided by the directives on issues that are small or of high minimum subscription.

State Supervision can permit the contents of a prospectus to be condensed if it does not impair the interests of shareholders, but this is not the same as the power to limit disclosures on grounds of commercial or public interest, for example for a required disclosures of "significant contracts concluded with other persons, if such contracts have a fundamental influence on the issuer's business" (Securities Act 591/1992, 74(1)(c)5).

The Czech law defines a public offer as an offer to "an unspecified group of persons, whose number is undetermined in advance". Directive 89/298 is less specific, providing only that it does not apply to offers to persons in the context of their trades, professions or occupations, or to offers to a restricted number of persons. In theory an offer could be made in the Czech Republic exclusively to a specific, but unquantified, group of persons, and the promoters might claim that it was not a public offer because the recipients were "specified".

In harmonizing further the Czech primary market regime with the EU regime, Czech regulators may consider the following areas where divergence seems to exist:

- The definition of securities, for the purposes of the primary market regulation, is different
- Prospectuses are not required for public offers of stock that will not be publicly traded
- Prospectuses are required for non-public offers of stock that will be publicly traded
- Prospectuses are required for small placings and similar methods of financing
- The law does not specify how issuer information other than annual reports is to be made public (leaving it to State Supervision)
- There is no recognition of shares which may be publicly held but which are not publicly traded (for instance because the issuer has procured the revocation of the public trading licence)[7]
- The definition of "public offer" is narrower than in the directives
- Public offers are restricted to primary offers by issuers; secondary offers are not regulated

The EU and Czech Regimes for Disclosure of Major Shareholdings

The **Major Shareholding Directive 88/627** provides that investors must be informed of major holdings and of changes in major holdings. It sets the disclosure threshold and requires any persons who directly or indirectly acquire or dispose of a disclosable shareholding in a listed company to inform the company and the competent authority.

The Commercial Code requires disclosure of ownership changes which cross the thresholds of 10, 20, 30, 50 and 65 percent. The Securities Law requires prospectuses to disclose ownership stakes of 10% or more which are known to the issuer.

It is recommended that EU thresholds be adopted, and that 5 percent be the threshold for disclosure set by the Act. However, companies should be able to provide for a lower threshold of disclosure to themselves in their own articles[8] and when they do so publish the disclosure.

The EU and Czech Regimes for Insider Dealing

Under the **Insider Dealing Directive 89/592,** insiders are defined as persons who possess inside information by virtue of membership in the management of an issuer, or by virtue of investment in the issuer, or by virtue of employment, profession, or duties. Insiders include "secondary insiders" – persons who have acquired inside information from primary insiders. Inside information is defined as precise, price-sensitive, non-public information relating to one or several issues or issuers of transferable securities which have been admitted to trading in a regulated and supervised market. Insider dealing is defined as the direct or indirect acquisition or disposal of transferable securities through a professional intermediary on the account of the insider or a third party. Insider dealing is prohibited. Related offences include unauthorised disclosure of inside information to third parties and

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7 Such shares would be the equivalent of unlisted stock issued by public companies in other jurisdictions.

8 In theory compliance with disclosure of shareholdings should be facilitated in the Czech Republic by the absence of nominee accounts, but there is still scope for notifiable holdings to be built up by persons acting in concert or persons registering their holdings in the names of third parties (who in Czech law would be beneficial owners but who would effectively be the agents of the investor.)

recommending or procuring a third party to acquire or dispose of securities admitted to trading on securities markets.

Under the Securities Law, insiders are defined as persons who due to their employment, profession, job, or function, are authorised to acquire confidential information about the economic and financial position of a certain issuer, or other facts significant for financial market development. Inside information is defined as unpublished price-sensitive information. Insiders include secondary insiders. Insider dealing means trading in the securities or making use of unpublished confidential information for personal benefit. The Securities Commission is the competent authority for investigation of the insider dealing legislation.

The Czech law is in several respects broader than the Directive, but the definition of insider is slightly narrower in that it restricts it to persons who are "authorised" to possess inside information, implying a relationship of trust with the source of the information. The Directive does not require such a relationship. An insider employed by one issuer might, in the course of his duties, acquire unpublished price sensitive information about a second issuer with which he has no connection. Similarly an investor in an issuer does not necessarily have any relationship with the management and/or may not undertake investment as an employment or duty.

The definition of insider should be made at least congruent with that in the Directive. Also, if the English wording is a precise version of the Czech, the legal definitions could be clarified in respect of primary and secondary insiders. In addition, the nature of the offence of insider dealing should be clarified.

The EU and Czech Regimes on Money Laundering

The **Money Laundering Directive 91/308** provides for the establishment of adequate rules against money laundering in order to avoid the financial sector being used for disguising proceeds from criminal activities in general and drug offences in particular.

The Money Laundering Act 61/1996 comprises "measures against legalisation of proceeds of criminal activity". It does not itself expressly prohibit legalisation, but creates a regime for monitoring large transactions. Legalisation of proceeds is defined as disguising proceeds of criminal activity as legally acquired income. Financial institutions are required to identify the principals in transactions exceeding CZK500,000 and to report unusual transactions to the Financial Analytic Unit of the Ministry of Finance. Financial institutions are defined as banks, investment companies, investment funds, pension funds, securities dealers and market organisers, insurance companies, the SCP, and operators of gaming clubs, casinos and betting shops, as well as persons who conduct auctions, real estate transactions, leasing or financial activity.

The Czech law follows much of what is provided in the Directive. There may be room, however, to extend the ambit of the law to make clear that proceeds from drug trafficking are criminal, and that financing terrorist activities is also criminal. There may also be room to mention foreign exchange offices specifically as "financial institutions" if they undertake transactions of the specified size and if they are not already adequately covered under "financial activities" generally.

The EU and the Czech Rules on Investor Compensation

The **Investor Compensation Directive 97/9** requires each Member State to ensure that one or more compensation schemes are in operation, and that all investment firms and credit institutions must belong to a scheme. The schemes must cover claims arising from the inability of an investment firm to repay money owed or belonging to investors, or to return securities to their owners. The schemes do not have to cover professional and institutional investors, state bodies, supranational institutions, or persons connected in various ways with the debtor firm. Minimum cover must be XEU20,000 per investor (subject to transitional provisions).

This Directive is not yet implemented in Czech law. The Banking Act provides for a deposit guarantee scheme, but that relates to another EU Directive (the Directive on Deposit Guarantee Schemes of May 1994).

Stage Two Measures

Investment Services

The **Investment Services Directive 93/22** is the foundation of the EU single market in securities market activities. It is the counterpart of the Admissions Directive and its fellows covering the primary market. The Investment Services Directive establishes a single passport regime under which investment firms authorised in one Member State can conduct securities business in any other Member State[9]. To be eligible for the authorisation (and the passport) investment firms must meet the minimum standards set by the Directive and enforced by the competent authorities. The conduct of investment business across national borders requires a parallel regime for regulated markets to which all authorised broker dealers may have direct access and which, under the mutual recognition directive, can deal in any securities listed in any other regulated market.

The legal definition of regulated activities and the instruments to which they are applied need to cover those of the Directive in order for the single passport regime to operate. Investment firms need to be fully authorised to undertake activities specified in Annex A to the Directive, with appropriate distinctions between core and non-core activities. Core activities can only be undertaken by licensed persons or "excluded" persons; non-core activities may be undertaken by unlicensed persons also.

In comparing the relevant Czech law (primarily the Securities Act and the Stock Exchange Act) with the Investment Services Directive, it is useful to proceed in three steps, namely, (i) a comparison of the functions of investment firms and the securities with which they operate; (ii) a comparison of licensing (authorisation) requirements; and (iii) a comparison of the requirements for the classification of a regulated market.

Functions of Investment Firms and Classification of Securities

As shown in Annex Table 3.2, Czech law differs from the Directive in the areas listed below and may have to undergo some adjustments in several of these areas:

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9 This is an extension of the single passport concept initiated in the Second Banking Directive 89/646, and is designed to give investment firms which are not credit institutions the same freedom to establish branches and provide cross-border services as that enjoyed by credit institutions.

- The distinction between core and non-core activities is not recognised,
- Rights to acquire shares or bonds by subscription or exchange are not classified as securities, unless captured under "other instruments recognised as securities",
- Money market instruments are not classified as securities (unless they are classified as securitized debt)
- Cheques, waybills and bills of exchange are classified as securities,
- Derivatives include commodity contracts, which are not included in the Directive,
- The definition of derivatives exclude derivatives which are nominally non-transferable, but which are "sold" by a contra transaction creating a new contract which cancels out the old one.
- There are no express "exclusions", which may increase the regulatory burden on the Commission

Table 3.2: Comparison Between Directive 93/22 and Czech Law on Services and Securities

THE INVESTMENT SERVICES DIRECTIVE	THE CZECH LAWS
Investment Firms activities: *Core Services* Underwrite issues Act as a broker Deal for own account Portfolio management *Non-core Services* Safe-keeping and administration Provision of finance to investors Corporate finance advice Services related to underwriting Investment advice Foreign exchange service related to investment *Investment Services Directive Annex- Section A*	Securities dealer activities: Act as a dealer Arrange issue of securities Act as a broker (agent) for a customer Act as a custodian Portfolio management Act as a depository Deal in derivatives Corporate finance advice *Securities Law 591/1992 s.45a*
Securities 1(a) Transferable securities (b) Units in UCITS 2. Money market instruments 3. Financial futures contracts (including cash settled instruments) 4. Forward interest rate agreements 5. Interest rate, currency and equity swaps 6. Options to acquire or dispose any of the above and includes currency and interest rate options *Investment Services Directive Annex Section C*	Securities 1(a) Shares (b) Interim certificates (c) Participation certification (fund units) (d) Bonds (e) Investment coupons (privatisation) (f) Coupons from bearer securities (g-k) Bills of exchange, cheques, travellers' cheques, waybills (l) Other instruments recognised as securities Derivatives [Transferable rights and Obligations derived from securities or Relating to exchange-traded commodities, And from currency, interest rate and Exchange rate indices and related Contracts] *Securities Act 591/1992 s.1, and s.8a*

Licensing Requirements under Czech Law

The Czech Securities Act did not adequately cover the licensing requirements for intermediaries, but it has been greatly strengthened by the 1998 amendments contained in the Commission Act, and now reflects several aspects of the Investment Services Directive. The principal remaining gaps in the Securities Act in this area are:

- Absence of the need for an independent professional audit,
- Absence of information about controllers,
- Absence of adequate notification requirements to assure the competent authority that licensed persons are in compliance with the law and regulations at all times,
- Inadequacy of provisions for refusal of licence or licence renewal, or for revocation.

Table 3.3: Comparison between Directive 93/22 and Czech Law on Investment Firms

THE INVESTMENT SERVICES DIRECTIVE	THE CZECH LAWS
Investment Firms principal authorisation requirements (excluding administrative details): - Provision for segregation of customer assets - Independent professional audit - Reputable and competent management - Provision of business plan - Approved controllers and ≥10% shareholders - Adequate capital in accord with Dir. 93/6 - Observance of official prudential rules - Observance of official rules of conduct *Investment Services Directive arts.3,8,9,10,11*	Czech principal licensing requirements (excluding administrative details): - Segregation required under amended law - Not specified in Act - All employees to be suitable and qualified - Provision of business plan` - Not required except for foreign interest - Basic capital specified: regulations in preparation - General rules of conduct in amended law, further regulations to follow Arrangements to prevent abuse of conflict of Interest *Securities Act as amended, 45,45a,46,47,47a,47b,48*
Grounds for refusal of authorisation - Insufficient capital - The management is not of adequate repute or experience - Other conditions specified in national law *Ibid art 3*	Grounds for refusal of licence - The material, personnel and organisational prerequisites for conducting activities as a dealer in relation to the business plan and the activities for which a licence is applied. *Ibid s. 46(1)*
Grounds for revocation of authorisation - Failure to start trading within 12 months - False statements in application - No longer fulfils original conditions for authorisation - Non-compliance with 93/6 - capital adequacy - Systematic and serious transgression of prudential rules and or rules of conduct - Any other cause provided in National Law	Grounds for withdrawal of licence - Substantial change in business fundamentals (capital, trading activity, or personnel and resources) - Bankruptcy order against a dealer - Activities of dealer prohibited under court or administrative order - At the request of the dealer - Breach of licence conditions or violation of legal provisions and decrees *Ibid s.48*

Czech Legislation and Practice on Regulated Markets

Each Member State is required, under the Investment Services Directive, to draw up a list of the regulated markets for which it is the home Member State and which comply with its regulations. This list is distributed with supplementary information to other Member States and to the Commission. For the Czech Republic to accord with this requirement it will need to achieve substantive market reform over and above legislative harmonisation, because the requirements for regulated markets are operational as well as legal.

The criteria for qualification as a regulated market are not fully stated in the Investment Services Directive. They have their origins in the 1977 *European code of conduct relating to transactions in transferable securities,* which stated that "securities markets should be sufficiently open to prevent their being fragmented, whereby the same security can be dealt in at the same time on different markets at different prices" and that "when a security is dealt in on the market the public should be informed not only of the different prices at which transactions take place but also of the volume of dealings" (unless the public has some other means of assessing liquidity). The UCITS Directive 85/611, en passant, describes regulated markets as markets which operate regularly, are recognised and are open to the public. The Investment Services Directive additionally prescribes that each competent authority shall take measures to provide investors with price data at the start of each day on the previous day's trading, including high/lows and weighted average prices. Additionally, for continuous markets, it shall ensure regular price and volume reports during the day.

As shown in Annex Table 3.4, Czech regulators must address some difficult questions in determining whether it should formally recognise the current markets for EU purposes. These include addressing whether: (i) How far can transactions be brought on-exchange and away from the unregulated OTC market; (ii) How far can the RM-System can become a regulated market; and (iii) How far price integrity may be achieved and maintained.

Capital Adequacy

The **Capital Adequacy Directive 93/6** sets the minimum initial capital for investment firms. Firms not dealing for their own account and not holding client assets require XEU 50,000. Firms which do hold client assets and which undertake, singly or in combination, order routing, order execution and/or portfolio management require XEU 125,000. All other firms require an initial capital of XEU 730,000.

The amended Securities Act sets minimum base capital for a securities dealer at CZK 10 million, approximately half the EU maximum base capital , other requirements are to be laid down by a legal regulation issued by the Ministry of Finance on the advice of the Commission. These regulations will take into account the other requirements of the Directive, relating to position risk, settlement/ counterparty risk, settlement/delivery risk, foreign exchange risk, own funds, and large exposures. The regulations will also need to ensure that licensed persons have the means of ensuring that their capital adequacy is maintained at all times and that regular and timely reports are made to the competent authority.

Table 3.4: Comparison Between EU Criteria for Regulated Markets and the Czech Market

THE EU DIRECTIVES[10]	CZECH PRACTICE (EQUITIES)
1. Regulation – i.e. subject to regulations, issued or approved by the competent authority on the operation of the market, access to the market, listing and admission to dealing	1. The Prague Stock Exchange has the authority to regulate its members and listing. The RM-System does not have members and is not in a regulatory relationship with its customers.
2. Price integrity – i.e. no fragmentation	2. Different prices can occur on different markets, though there is increasing convergence
3. Regular opening, associated with regularity of disclosure by issuers.	3. The RM-System and the Prague Stock Exchange operate regularly.
4. Open to the public – i.e. available for the execution of orders on behalf of the public and without discrimination between investors	4. Both organised markets are available for the execution of public orders and the RM-System permits the public direct access.
5. Transparent and liquid – i.e. in accord with the Investment Services Directive	5. Both markets report on-market transactions promptly but official reporting of "direct trades" is not reliable intra-day
6. Recognised	6 Recognition, for EU purposes is for the Commission to decide
The European Code "Supplementary Principles" 9 & 10, The UCITS Directive 85/611 art19, the Investment Services Directive 93/22 arts 16 & 21	

Prudential Supervision ("Post BCCI"[11]) Directive

Directive 95/26 provides that competent authorities should not authorise or continue the authorisation of a credit institution, an insurance undertaking, an investment firm or a UCITS (generically termed "financial undertakings") where the competent authority is liable to be prevented from effectively exercising its supervisory functions by the close links between the undertaking and other persons.

The Directive amends earlier directives relating to the different sorts of financial undertaking and specifies means by which competent authorities may pool information on connected persons. It also

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10 See also: *Eligible markets for authorised unit trusts*, Guidance Release 5/94, Securities and Investments Board, London 1994

11 The directive was issued in the aftermath of the failure of the Bank of Credit and Commerce International as a result of which it is generally known as the "Post BCCI" Directive.

provides that it is the duty of auditors to report promptly to the competent authorities facts which are liable to have a serious effect on the financial situation or the administrative and accounting organisation of a financial undertaking.

STATISTICAL ANNEX

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Table A1.1: Average ICOR in Middle Income Economies, 1987-96 [1/]

	Real GDP growth 1987-1996	Fixed investment to GDP 1987-1996	ICOR
Lower Middle Income Economies			
Egypt, Arab Rep.	4.0	22.6	5.7
Bolivia	..	..	..
Indonesia	7.6	27.0	3.5
Philippines	3.7	21.2	5.7
Morocco	3.3	21.7	6.6
Syrian Arab Republic	..	..	..
Papua New Guinea	4.5	22.7	5.1
Guatemala	3.9	13.8	3.6
Ecuador	2.7	19.7	7.3
Dominican Republic	3.9	24.3	6.3
Jamaica	2.7	26.0	9.8
Jordan	3.2	27.9	8.7
El Salvador	4.2	15.7	3.7
Paraguay	3.7	21.5	5.8
Tunisia	4.3	24.3	5.6
Colombia	4.2	17.4	4.2
Namibia	3.1	18.4	5.9
Peru	1.7	18.7	10.7
Costa Rica	4.0	20.3	5.0
Lebanon	..	..	..
Thailand	9.6	37.8	3.9
Panama	2.5	17.5	7.1
Turkey	4.4	24.4	5.5
Botswana	7.2	27.0	3.8
Venezuela	2.2	17.9	8.0
Upper Middle Income Economies			
South Africa	1.6	17.8	11.4
Mexico	2.6	18.2	6.9
Mauritius	5.8	27.1	4.7
Gabon	1.6	24.9	15.6
Brazil	1.7	21.3	12.4
Malaysia	8.5	33.6	4.0
Chile	7.1	23.4	3.3
Oman	..	..	..
Uruguay	3.3	12.1	3.7
Saudi Arabia	2.8	20.1	7.1
Argentina	..	..	..
Average of middle income countries	3.7	20.2	5.5
Average of lower middle income countries	3.8	20.3	5.4
Average of upper middle income countries	3.5	19.9	5.7
1/: Excluding Transition Economies			

Source: World Bank

Table A1.2: Average ICOR in Selected CEE Countries, 1993-98

	1993	1994	1995	1996	1997	1998 [1]	Average 93-98	Average 94-98
Fixed Investment to GDP								
Czech Republic	28.5	29.6	32.8	33.0	30.7	28.6	30.5	30.9
Slovenia	18.8	19.7	21.2	22.4	23.7	24.2	21.7	22.2
Poland	15.9	16.2	17.1	19.0	20.8	21.5	18.4	18.9
Hungary	18.9	20.1	20.0	21.5	22.1	23.6	21.0	21.5
Slovak Republic	32.7	29.4	27.4	36.9	38.6	37.0	33.7	33.9
Real GDP growth								
Czech Republic	0.6	2.7	6.4	3.9	1.0	-1.0	2.3	2.6
Slovenia	2.8	5.3	4.1	3.1	3.8	3.9	3.8	4.0
Poland	3.8	5.2	7.0	6.1	6.9	6.0	5.8	6.2
Hungary	-0.6	2.9	1.5	1.3	4.4	5.0	2.4	3.0
Slovak Republic	-3.7	4.9	6.9	6.6	6.5	5.0	4.4	6.0
Implicit ICOR								
Czech Republic							13.5	12.0
Slovenia							5.7	5.5
Poland							3.2	3.0
Hungary							8.7	7.1
Slovak Republic							7.7	5.7

1/ World Bank staff estimate.

Sources: National Statistical Office in each country and World Bank staff estimates.

Table A2.1: Volumes of New Issues of Publicly Tradable Securities

	1993	1994	1995	1996	1997
Total	35.8	37.8	11.7	7.6	6.5
Bonds	2.0	4.0	4.4	4.3	4.3
Of which:					
- state	1.2	1.3	1.5	1.5	1.5
- banks	0.4	2.1	2.1	1.3	1.7
- industry	0.3	0.6	0.8	1.3	1.0
- HZL	0.0	0.0	0.0	0.1	0.1
- municipal	0.1	0.0	0.0	0.1	0.0
Shares	33.6	32.5	5.5	1.6	1.6
Of which:					
- banks	10.2	1.2	2.5	0.5	0.7
- industry	11.8	17.2	1.8	0.5	0.1
- other	11.6	14.1	1.2	0.6	0.8
Unit Trusts	0.2	1.3	1.8	1.7	0.6
Of which:					
- open [1)]	0.1	0.0	0.3	1.5	0.6
- closed	0.1	1.3	1.5	0.2	0.0

Source: Czech Securities Exchange Commission

Table A3.1: Investment Funds in 1996

	Name of fund	Own property	Rate	No. of shares	Discount
0044941200	Kredital IF	721083	113.00	117228	98.16
0043873863	IF Bohemia	306401	27.50	615088	94.48
0018235999	MOTOFOND	52757	52.00	83100	91.81
0018234666	PROREGIO	13349	54.00	21710	91.22
0045312737	IF CKD Kutna Hora	6334	100.00	6250	90.13
0045193215	IF Z	64858	45.00	146726	89.82
0045312486	IF Sdruzeni krestanskych	128365	36.00	365105	89.76
0047673354	Moravskocesky IF	959963	10.00	9935618	89.65
0044964447	Moravsky druzstevni IF	27213	80.00	36324	89.32
0042937043	Kredit	52009	25.20	238115	88.46
0044566000	Jablonecka bizuterie	133349	36.62	434240	88.07
0044796447	Ceskomoravsky IF	9896	45.00	26352	88.02
0042885230	Prvni ceskomoravsky IF	42805	36.00	151916	87.22
0045242151	Intersigma IF	65920	21.10	420190	86.55
0049241788	KIP	82550	101.00	113754	86.08
0044936079	Sigmia IF	23262	86.00	40696	84.95
0045245550	IF Prace	17019	66.00	46684	81.90
0044265590	Creditanstalt	3050726	209.00	2779480	80.96
0060192071	Raiffeisen Alfa	45373	82.90	110334	79.84
0045241406	C.S. infrastruktumi IF	1901219	72.80	5300958	79.70
0044797877	Vyberovy investicni	121236	50.00	495945	79.55
0045244316	Metall	77216	180.00	93441	78.22
0047783095	Krusnohorsky IF	766372	110.00	1603208	76.99
0045234523	Agroma	88721	62.50	337250	76.24
0045245207	IFER	5426	93.00	14380	75.35
0060192364	RDP Group	33581	173.93	47612	75.34
0047285842	Cesky narodni investicni	343690	126.00	700000	74.34
0044565666	TEXINVEST	753	140.00	1418	73.64
0040233111	Ekologicky IF	35277	42.00	224107	73.32
0043875173	Potravinarsky IF	372290	508.00	208373	71.57
0044940777	Profit fond	32451	243.00	39659	70.30
0045244987	PGH IF	17959	150.00	36766	69.29
0044477007	Valuta	14326	187.00	23602	69.19
0043875149	Prumyslovy IF	154890	514.00	92860	69.18
0044795998	Turisticky IF	77711	39.95	631698	67.53
0043875157	IF obchodu, cestovniho	883694	492.00	595407	66.85
0044699191	Rolnicky IF	65734	110.00	199429	66.63
0044444133	AGROFOND	134083	60.96	749184	65.94
0043875106	Rentiersky IF	2581934	505.00	1765653	65.47
0043875114	IF bohatstvi	2607942	731.00	1255527	64.81
0044741596	IF union	160515	772.00	74435	64.20
0044100001	Slovacky IF	91237	130.00	254700	63.71
0015053750	Kuponinvest IF	242456	167.10	526964	63.68
0047285834	Cesky narodni investicni majetkovy	336092	126.00	1000000	62.51
0045312443	Investicni privatni fond	120586	158.00	286123	62.51
0045313300	IF energetiky	147332	735.00	80802	59.69
0047674555	II. ZP a DP	105186	172.10	247930	59.43
0044797770	PIF -1 Privatizacni IF	5664579	346.00	6685682	59.16
0060192020	2. Spontelni privatizacni IF	1726370	595.00	1245383	57.08

0049688600	Zlaty IF Kvanto	1100845	160.20	2954596	57.00
0043875131	Kristalovy IF	908435	551.00	775672	52.95
0044848340	Investicni Podnikatelsky fond	40943	137.10	140675	52.89
0045241333	Pragofond	53547	114.51	220603	52.82
0040526038	AB-UNIFOND	83063	80.00	504882	51.37
0044740417	Deza IF	23866	208.50	59262	48.23
0045534411	A + A IF	52358	200.00	135634	48.19
0045193355	Pivovarsky IF	728574	1222.00	312021	47.67
0045245282	Concordia Invest	130277	354.20	195656	46.80
0044794100	KVANTO	717404	189.00	2039436	46.27
0063079321	Sporitelni privatizacni - Vynosovy IF	5855501	170.00	19338640	43.86
0049241311	Sporitelni IF	665256	1625.00	233000	43.09
0010000500	Consus IF	139847	153.65	522861	42.55
0044938888	Moravskoslezsky regionalni IF	12328	150.00	47276	42.48
0044848331	Investicni portfoliovy fond	67655	143.00	283040	40.17
0043004300	Investicni privatizacni fond KB	10130912	688.00	9315242	36.74
0042634377	Zemedelsky IF	27531	460.00	38093	36.35
0045245665	Zivnobanka-1 IF	2826929	464.00	3924205	35.59
0045316651	Restitucni IF	14847597	846.00	11590000	33.96
0063079313	Sporitelni privatizacni	2273243	79.62	19338640	32.27
0045193100	Kompas-OK IF	34887	189.00	126324	31.56
0045354120	Sokolovsky IF	223109	330.00	488756	27.71
0045244545	Zlata brana	54125	940.00	46568	19.12
0063079330	Sporitelni privatizacni-Cesky IF	10242545	442.00	19338640	16.55
0045245622	Chemofond	205357	254.00	700238	13.39
0040233057	Severozapadni IF	1501	652.00	2216	3.74
0045354049	Zemedeiskopotravinarsky IF	11426	210.00	52584	3.36

Source: Czech Securities Exchange Commission

Investment Funds in 1997

	Name of fund	Own property	Rate	No. of shares	Discount
0060737123	Nas investicni fond	1458	140.00	1000	90.40
0060192186	RUBIN	25850	290.00	18012	79.79
0042634377	Zemedelsky IF	24006	160.00	38093	74.61
0045245266	Dialog-Invest	188792	124.00	422698	72.24
0045312486	IF Sdruzeni krestanskych	105539	81.10	365105	71.94
0044940777	Profit fond	32825	238.00	39659	71.24
0047783095	Krusnohorsky IF	640879	115.30	1603208	71.16
0044100001	Slovacky IF	85750	100.20	254700	70.24
0044164025	Agro	7300	30.00	88520	63.62
0044797877	Vyberovy investicni	75334	56.40	495945	62.87
0049241613	COR/US garant	179990	223.00	302453	62.53
0045242151	Intersigma	31023	28.00	420190	62.08
0018189521	Moravskoslezsky	3014	78.00	14768	61.78
0045243999	Fond pro prosperitu	398058	40.00	3848887	61.32
0045313113	J.B. IF	6853	95.50	28216	60.68
0049241621	COR/US progres	102985	244.00	179348	57.51
0040233111	Ekologicky IF	23555	55.00	224107	47.67
0043875106	Rentiersky IF	2199013	688.00	1765653	44.76
0043875157	IF obchodu	734885	705.00	595407	42.88
0018189555	IF AGREKO	75237	147.50	300344	41.12
0043875114	IF bohatstvi	2190235	1035.00	1255527	40.67
0043875131	Kristalovy	1157134	890.00	775672	40.34
0044741596	IF Union	139585	1145.00	74435	38.94
0045241333	Pragofond	39904	114.51	220603	36.70
0045245665	Zivnobanka-1	2472407	403.00	3924205	36.04
0043004300	Investicni privatizacni fond KB	9165505	685.00	9315242	30.38
0049241788	KIP	85509	560.20	113754	25.48
0045316651	Restitucni IF	13849010	904.00	11590000	24.35
0042885230	Prvni ceskomoravsky IF	37272	245.00	151916	0.14

Source: Czech Securities Exchange Commission

Table A5.1: Distribution of Funds by Market Share in Participants, June 1997 (% of participants)

Size	Funds	Market share
100K+	6	65
50-100K	2	10
10-50K	16	22
10k-	15	3
Total	39	100

Source: Ministry of Finance

Table A5.2: Distribution of Funds by Basic Capital, June 1997

Basic Capital	Funds
100M+	6
50-100M	14
20-49M	11
20M-	8
Total	39

Source: Ministry of Finance

Table A5.3: The 15 Largest Pension Funds in Terms of Participants

Pension Fund	1995		1996		1997	
	(000s)	%	(000s)	%	(000s)	%
KB	238.0	18.5	280.0	16.4	264.9	15.3
Vojensky	242.4	18.8	269.2	15.7	227.1	13.1
Prumyslovy	6.5	0.5	80.0	4.7	180.2	10.4
Sporitelni	114.6	8.9	149.6	8.7	165.1	9.5
Podnikatelsky	280.0	21.8	300.0	17.5	146.0	8.4
Ceske Pojistovny	71.7	5.6	111.0	6.5	133.0	7.7
Ceskomoravsky	92.5	7.2	105.0	6.1	115.1	6.6
VVPF	48.3	3.8	66.6	3.9	75.2	4.3
Allianz-Zivnobanka	22.0	1.7	42.7	2.5	52.5	3.0
Jistota	18.3	1.4	34.0	2.0	49.9	2.9
Energie	23.6	1.8	37.5	2.2	45.3	2.6
Koruna	10.0	0.8	40.0	2.3	42.9	2.5
Winterthur	3.5	0.3	20.4	1.2	42.8	2.5
Cesky PF Zdravi	27.0	2.1	29.0	1.7	39.7	2.3
Zemsky	20.2	1.6	30.2	1.8	25.0	1.4
Sub-total 15	1218.6	94.7	1595.3	93.1	1604.8	92.5
APF Total	1286.2	100.0	1712.5	100.0	1734.3	100.0

Source: Association of Pension Funds

Table A5.4: Pension Funds by Size of Client Funds and Basic Capital

Fund	Client Funds		Client Funds		Basic Capital	Ratio of Basic Capital to Client Funds
	1996		1997		1997	1997
	(bn CZK)	%	(bn CZK)	%	(mn CZK)	%
KB	2.16	19.9	3.42	19.7	200.0	5.8
Vojensky	1.92	17.4	2.70	15.5	50.0	1.8
Podnikatelsky	1.89	17.1	1.68	9.7	40.0	2.3
Sporitelni	0.74	6.7	1.52	8.8	250.0	16.4
Ceske Pojistovny	0.70	6.3	1.33	7.7	110.0	8.2
Ceskomoravsky	0.78	7.0	1.17	6.7	80.0	6.8
Prumyslovy	0.20	1.8	0.93	5.3	20.0	2.1
VVPF	0.44	4.0	0.70	4.1	39.5	5.6
Allianz-Zivnobanka	0.30	2.7	0.56	3.2	60.0	10.7
Energie	0.30	2.7	0.45	2.6	60.0	13.3
Cesky PF Zdravi	0.36	3.2	0.40	2.3	100.0	25.0
Koruna	0.18	1.6	0.38	2.2	55.7	14.6
Jistota	0.17	1.5	0.38	2.2	45.2	11.8
Winterthur	0.09	0.8	0.25	1.4	61.5	24.6
Zemsky	0.14	1.3	0.22	1.3	59.0	26.8
Sub-total 15	10.37	93.6	16.09	92.7	1230.9	7.6
APF Total	10.78	100.0	17.4	100.0	1746.1	10.0
Market Total*	11.56		19.60		2010.0	10.2

* based on MOF data.

Source: Association of Pension Funds and Aspekt Magazine

Table A5.5: Operating Cost Ratios
(% of client funds)

Pension Fund	1996	1997
	%	%
KB	4.1	3.2
Vojensky	5.9	4.3
Podnikatelsky	6.3	7.5
Sporitelni	20.3	7.9
Ceske Pojistovny	12.5	6.6
Ceskomoravsky	8.0	6.4
Prumyslovy	14.4	6.0
VVPF	23.0	9.8
Allianz-Zivnobanka	n.a.	5.3
Energie	11.3	5.9
Cesky PF Zdravi	11.6	8.5
Koruna	27.8	9.8
Jistota	11.7	6.1
Winterthur	43.1	18.0
Zemsky	22.9	8.6
Large 15	9.3	6.1
Total APF members	10.4	6.5

Source: Association of Pension Funds

Table A5.6: Credited Rate of Return, 1996

Rate of Return	15 Large Funds	Other Funds	All Funds
<8%	2	2	4
8% < 10%	6	4	10
10% < 12%	6	4	10
12% < 14%	1	5	6
14% <	0	4	4
	15	19	34

Source: CSOB

Table A5.7: Financial Results and Returns to Client Accounts

Fund	1996 Profit	1996 Profit/Client Funds	1996 Client Return		1997 Profit	1997 Profit/Client Funds	1997 Client Return
	(mn CZK)	%	%		(mn CZK)	%	%
KB	121.8	7.9	8.8		278.3	10.0	9.1
Vojensky	169.3	11.9	10.0		254.9	11.0	10.03
Prumyslovy	12.8	12.6	12.1		81.1	14.4	11.0
Sporitelni	11.3	2.6	8.1		90.4	8.0	9.05
Podnikatelsky	78.1	5.5	8.0		112.0	6.3	n.a.
Ceske Pojistovny	9	1.9	10.0		54.9	5.4	9.6
Ceskomoravsky	75.0	13.5	11.3		106.7	10.9	10.33
VVPF	-26.7	-8.8	10.0		17.6	3.1	n.a.
Koruna	7.1	7.2	11.0		27.2	9.6	12.0
Jistota	6.8	6.3	8.0		17.8	6.5	7.0
Allianz-Zivnobanka	n.a.	n.a.	9.0		1.4	0.5	9.0
Energie	-12.1	-5.5	6.0		17.3	4.6	10.0
Cesky PF Zdravi	14.3	5.6	8.8		25.7	6.8	7.7
Zemsky	-14.1	-14.6	7.0		9.4	5.1	7.0
Winterthur	-21.0	-32.2	11.4		-11.2	-6.6	11.2
Large 15	431.6	6.1			1083.5	8.3	9.46
APF members	426.4	5.6			1175.6	8.3	9.71

Source: Association of Pension Funds and CSOB

Table A5.8: Gender and Age Distribution of Participants, June 1997

Age	Men	Women	Total	% Women
	(% of total)	(% of total)	(% of total)	(% of total)
35-	7.3	7.5	14.8	50.4
35-49	16.7	20.9	37.6	55.7
50-64	17.7	20.1	37.8	53.2
65+	4.4	5.4	9.8	55.2
Total	46.1	53.9	100.0	53.9

Source: Staff calculations based on Ministry of Finance data

Table A6.1: Insurance Premiums in Czech Republic and Europe, 1995 (% of GDP)

	Total	Nonlife	Life		Total	Nonlife	Life
Czech Republic	2.69	1.96	0.73	Austria	5.49	3.51	1.98
				Belgium	4.91	2.62	2.29
Bulgaria	2.06	1.37	0.69	Denmark	5.25	2.57	2.68
Croatia	2.97	2.80	0.17	Finland	7.40	1.96	5.44
Hungary	2.15	1.51	0.65	France	8.55	3.14	5.41
Macedonian	3.72	3.44	0.28	Germany	6.42	3.84	2.58
Poland	1.95	1.30	0.65	Greece	1.65	0.84	0.81
Romania	0.40	0.36	0.04	Ireland	7.76	3.39	4.37
Russia	1.34	0.75	0.59	Italy	3.83	2.41	1.42
Slovak Republic	2.02	1.54	0.48	Luxembourg	4.51	3.13	1.38
Slovenia	4.65	3.96	0.69	Netherlands	8.93	4.18	4.75
Ukraine	0.45	0.34	0.11	Portugal	5.04	2.86	2.18
				Spain	4.82	2.84	1.98
Norway	4.65	2.59	2.06	Sweden	4.77	2.34	2.43
Switzerland	10.45	3.74	6.71	UK	10.33	3.75	6.58

Source: Swiss Re: Sigma, No. 4/1997.

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